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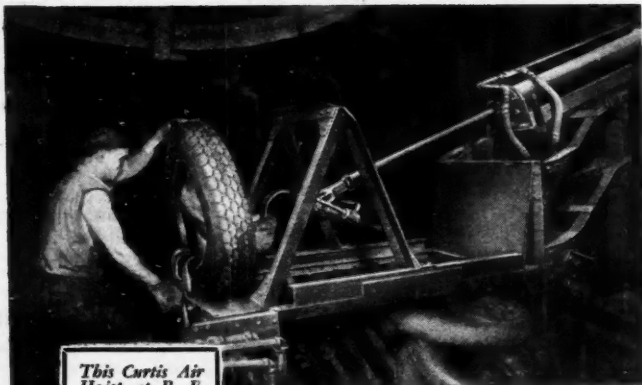
"For 15 years, Curtis Air Hoists have given us steady trouble-free service in a score of ways. Curtis construction is so simple, so sturdy that, if our work were concentrated, one man could handle the maintenance of our 150 Curtis Air Hoists.

### Stand up under hard service

"Some of our Curtis Air Hoists operate at 10 second intervals, 24 hours a day, five days a week. In spite of this severe service our only maintenance expense is the oiling and renewal of leather cups and the usual repairs of stuffing boxes and valves after seven or eight months.

### Lift—Push—Pull Service

"The fact that, with air power, a load can be lifted or pushed or pulled with greater speed, and with power varied by a simple valve lever to suit the case, makes Curtis Air Hoists indispensable. The protective cushioning with which a load can be quickly dropped to the right point is also important."



This Curtis Air Hoist at B. F. Goodrich Company, performs 8,640 operations every 24 hours. After one million and a quarter such operations, requires only simple servicing.

### Curtis Air Hoists Cut Costs

In thousands of industries, Curtis Air Hoists help to cut time and labor costs—speed up production. For plant operations that require push, pull, lift or lowering, Curtis Air Hoists do the job more quickly,

efficiently and inexpensively. The complete report by W. P. Sheehy, Goodrich Maintenance Engineer, will be of vital interest to production executives. Write for your copy today.

Curtis Pneumatic Machinery Co., 1917 Kienlen Ave., St. Louis, Mo.; 518 D Hudson Terminal, New York City

# CURTIS

COMPRESSORS—AIR  
HOISTS—I-BEAM  
CRANES and TROLLEYS

November 17, 1934

# AUTOMOTIVE INDUSTRIES

## AUTOMOBILE

Reg. U. S. Pat. Off.



Volume 71

Number 20

JULIAN CHASE, Directing Editor

DON BLANCHARD, Editor

P. M. HELDT, Engineering Editor

JOSEPH GERSCHLIN, Eng. Editor

THEL F. DENHAM, Detroit Editor

JEROME H. FARRIS, Ass't Editor

T. LAWTON SLAUGH, News Editor

GEOFFREY GRIER, Art Editor

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**CHILTON COMPANY**

Chestnut and 56th Streets, Philadelphia, Pa.

C. A. MUSSELMAN, President and General Manager

J. E. HILBRETH, Vice-Pres. and Director of Sales

W. I. RALPH, Vice-Pres. G. C. BUZBY, Vice-Pres.

W. A. WARBER, Secretary and Treasurer

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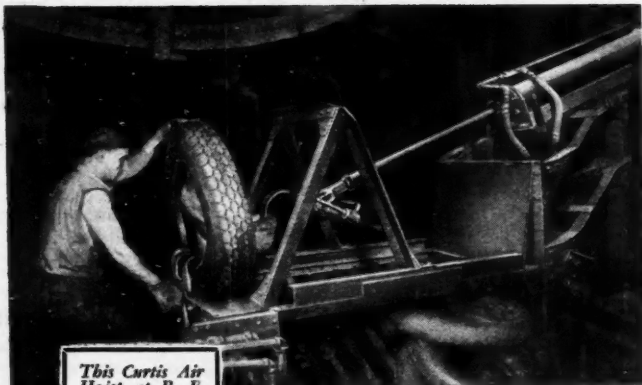
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Automotive Industries

## Model Changes Slow Production

### November Output to Be Low for the Year; Dealer Stocks Down

By A. F. Denham

Detroit Editor, Automotive Industries

With motor vehicle production at the low point for the year at mid-month, November totals will depend largely on whether some of the major producers are able to get under way with new models before the first of December.

Of the manufacturers which will shortly introduce new models, Chevrolet is the only major company in production and it is close to the changeover point. Consequently, November output totals will depend much on when Ford and Plymouth swing into production. Present indications are, however, that neither of these producers will contribute heavily to this month's total.

Other manufacturers are also delayed in getting under way due to last minute design changes with the result that the introduction of some new models has been postponed 30 to 60 days so far as really active production is concerned. It is quite likely that several producers will be forced under the circumstances to go to the New York Show with hand-built jobs.

Sales which climbed sharply during the closing week of October due largely to the effect of general clean-up price reductions, are now once more on the downward trend. While some factories are claiming that the drop-off is due in part to shortages of certain body models, this does not seem to be a major factor. Of more importance probably is that the effects of the clean-up price cuts have been wearing off and that with this stimulus less potent, sales are taking their normal downward seasonal trend. In general the first ten days or two weeks of November were pretty much on a level with the same period in October, but the latter part of this month is expected to drop the total well below last month's levels.

However sales to consumers will lead sales to dealers by a considerable margin  
(Turn to Page 604, Please)

#### Sloan Answers Dillon's Conference Proposal

The way is open for accredited representatives of General Motors' employees to contact the management of the units by whom they are employed, Alfred P. Sloan, Jr., GM president, wrote F. J. Dillon, Detroit A. F. of L. organizer, last week in response to the latter's letter requesting a conference between Mr. Sloan and representatives of the United Automobile Workers' Unions.

The text of Mr. Sloan's reply follows: "Referring to your letter of the 6th

#### Automotive Conferences Await President's Return

The conferences which President Roosevelt wrote Abram Macauley, AMA president, and William Green, AFL chief, he would arrange for the discussion of automotive employment, apparently will not take place until after Mr. Roosevelt's return from Warm Springs, Ga., about three weeks hence. At the White House, *Automotive Industries* was informed that no provision has been made for holding the conferences prior to the President's departure on Thursday of this week.

inst., as you know the operations of the General Motors Corporation are conducted by separate divisions or companies located in various parts of the country. In conformity with our statement of basic policies, mentioned in your communication, should the accredited representatives of any employees have occasion to discuss with the management of any such unit any matters of mutual interest, I am quite sure they will find the opportunity open to them directly through the established channels."

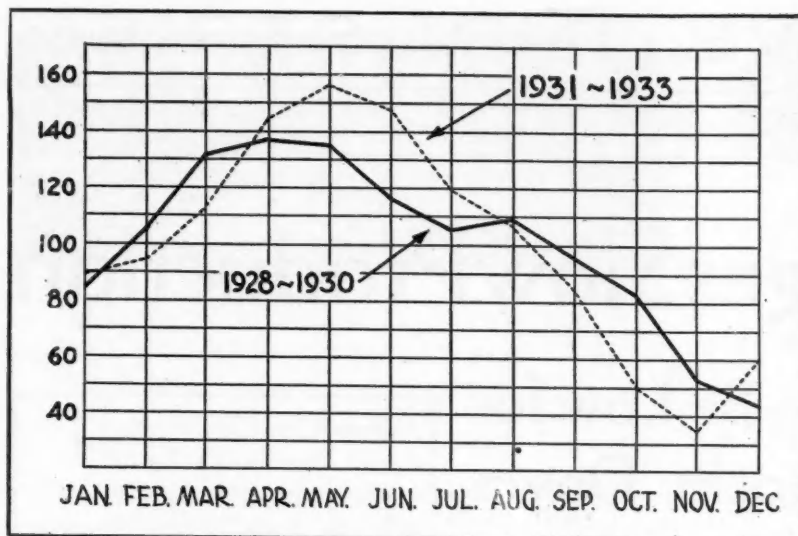
### Stabilizing Work by Staggering Model Changes May Revive Old Sales Problems

DETROIT, Nov. 14.—Uncertainty as to whether or not automotive manufacturers would follow the lead of General Motors in shifting some new model announcements to summer or fall prevailed here this week.

Some companies which in the past have pursued the policy of summer or fall announcements hail this decision of General Motors as a vindication of their own practices, while others, uncertain as yet on what course to pursue, are looking to the Automobile Manufacturers Association for the formulation of an industrial policy in this respect.

Of course, actual staggering of new model introductions really is possible to any important extent only for two major companies—General Motors and Chrysler—since other manufacturers do not have so diversified lines of cars. The possibility exists, however, that these other companies will tend to shift more announcements to summer and fall than customary in the past.

Alvan Macauley, president of Packard and of AMA, stated that no definite policy had been adopted with respect to staggering new models by the industry as a whole but that the plan has been the



The average production curve for the three years (1928-1930) previous to the NACC uniform announcement recommendation shows less variation than the average curve for the three succeeding years (1931-1933). The change in model introduction policy may or may not have been the cause. For each curve, 100 = monthly average production for the three-year period.

subject of frequent discussions since the industry is anxious to do everything in its power to assist in the stabilization of employment.

Speaking for Packard, Mr. Macauley points out that his company has for a long time believed in the soundness of fall introductions of new cars. Other independent companies expressed themselves as uncertain of policies to be pursued, pointing out that cooperative action on the part of the industry is essential to assure success of the plan and to prevent undue demoralization of the retail market.

If the industry generally does follow the lead of General Motors and revert to its former practice of bringing out new models whenever the individual manufacturer sees fit, the move will come after four years of rather close adherence to the NACC recommendation of January, 1931, to concentrate new model introductions in a period of a few months ending with the New York Show. In estimating the consequences of such a move, it must be recognized that any improvement in employment which results from it may be gained at the cost of less orderly conditions in the retail market.

The NACC recommendation in January, 1931, that new model introductions be concentrated in a short period each year, was made largely on the urgings of dealers who contended that with model changes strung out over the year, some dealer in each community was always cleaning up. The result was, it was pointed out, dealers were continuously faced with clearance competition either in the form of reduced new car prices or over-allowances on used cars, usually the latter. The net effect was that the market was in an almost constant turmoil.

Reversion to staggered new model intro-

ductions would mean a reappearance of this problem in the retail field. Whether it would be as serious as it has been in the past would depend largely upon whether the manufacturers were more successful in minimizing the extent of their clean-ups.

Theoretically the dealer code would take care of this situation, but actually code administrative agencies are not cheering the move since they see it intensifying their compliance problems. It is common knowledge that violation of the code's marketing rules has never been so widespread as during the clean-up of 1934 models which is now in progress. Code administrators are not altogether surprised at this development since they recognized that the clean-up would put tremendous pressure on prices. However, many of them felt that after the clean-up was complete, compliance would get back to normal.

But if new model introductions are to be staggered, which means that clean-ups will also be staggered, some code administrators are really doubtful of their ability to control

the situation. Certainly it would appear that the urge to chisel is going to be stronger in 1935 if clean-up price reductions are not limited to the closing months of the year.

Turning to the employment question, production statistics seem to indicate that the fluctuations in output were less severe when new models were staggered than during the 1931-1933 period when they were concentrated in the fourth quarter. The accompanying chart shows the average monthly variation in production in the 1928-1930 period when new model introductions were scattered over the year, in comparison with similar data for the 1931-1933 period when introductions were fairly well concentrated. The range of variation is from 44 to 138 per cent of average monthly production with seven months above 100 in the former case, while in the latter the variation is from 35 to 157, with only six months above 100.

It is easy to conclude from the chart that staggered new model introductions do give more stable production and hence more regular employment. But it is quite possible that other factors had a more determining influence. For example, during the 1931-1933 period, the industry was hoping constantly that business would turn the corner in the second half which possibly tended to accentuate the seasonal peak in the second quarter.

By spreading new model introductions, it is hoped, of course, that the major fluctuations in the various plants will come at different times of the year and thus tend to offset each other. This should produce smoother employment and production curves for the industry as a whole. It is less certain, however, that it will stabilize employment for the individual worker since he will still be subject to variations in the plant which employs him. In this connection, it might be mentioned, however, that there is some statistical evidence that plants introducing new models in the fall have had more stable production than those announcing in January. Insofar as staggering introduction puts more announcements into the fall or late summer, this evidence provides an additional reason for believing that the move will help to stabilize production not only of the industry generally but of some individual plants.

## Chevrolet Has Control Plan for Dealer Stocks

Chevrolet is introducing a new plan of car distribution apparently aimed at keeping dealer inventories in better balance and at minimizing the clean-up problem, it is learned from unofficial sources.

It is understood that the plan contemplates that zone office representatives in conference with individual dealers will establish basic stock levels which will be changed three or four times a year in accordance with seasonal changes in the market. Every day, or at least every day on which there is a change in stock, the dealer will report the change to the zone office where, it is said, perpetual in-

ventory records will be maintained on each dealer.

Another reported feature of the plan is that dealers will pay for cars through GMAC. Although the details of this phase of the plan presumably will vary somewhat in different States, in general it is understood that GMAC will get title to the cars at the assembly plants through a lease agreement or other arrangement. The cars, of course, will go direct to the dealer, but he will have three days to make payment for them to GMAC where he desires to pay cash. Where floor-plan accommodation is desired, the transaction presumably will be handled in the usual manner.

## President Sees Unemployment Insurance, General Security as Country's Tasks

WASHINGTON, Nov. 14—"Our first task is to get the economic system to function so that there will be greater general security," President Roosevelt said today in a message to the National Conference on Economic Security held here this week. In his speech, the President also revealed that unemployment insurance legislation was definitely a part of the administration program for the coming Congress, but that old age and other forms of social insurance would be deferred for action at some indefinite date in the future.

The primary importance of general recovery was also emphasized in a dinner speech before the conference by Secretary of Commerce Roper who said "No one element, in our form of government and society, can have balanced economic security unless all elements have." Mr. Roper also said that economic security included not only employment at living wages and safeguards for savings, but also the security of management, capital and our natural resources.

The Wagner unemployment insurance bill of the last session, which called for a five per cent federal tax on payrolls with provisions that payments made into reserves established under State laws would be credited against the federal tax, apparently is to provide the pattern for the administration legislation. All funds would be handled by the federal government but the States would administer the laws which are expected to vary in detail to meet local conditions. The President emphasized that the insurance must be financed by contributions and it is understood that this reference was to payments to State funds. If the Wagner pattern is followed, of course, the tax it would levy on payrolls would be largely for the purpose of accelerating action by all States so that all employees would be covered and so that employers in States with unemployment reserve laws would not be at a competitive disadvantage with employers in States without such laws.

The President believes that the law should aim at decreasing rather than increasing unemployment, and he also feels that the contribution it would make to individual security will make for general security.

### Long's Debt Moratorium Finance Company Threat

The two-year debt moratorium bill which now appears certain to pass the Long-controlled Louisiana legislature, constitutes a real threat to automobile finance companies. Under its terms, any

individual who can satisfy the State Banking Commissioner that there is sufficient justification for a moratorium on his debts, is eligible for protection from his creditors. The bill covers debts contracted prior to Nov. 1, 1934, which makes practically all times sales effected this year subject to its provisions.

## 1935 Model Pre-Views Under Way This Week

**Hudson, Oldsmobile, Dodge Distributors and Dealers Get Look at New Cars**

Preliminary showing of 1935 models to distributors and dealers got under way this week with pre-views by Hudson, Dodge and Oldsmobile. Ford held showings for its field sales organization a week ago and Plymouth and DeSoto are expected to stage advance displays within a week or so. Pre-views of new Chevrolet and Pontiac models are not expected until December.

At the showings held this week factory officials expressed themselves as anticipating material sales increases for the coming year. Oldsmobile forces, for example, were told by D. E. Ralston, sales manager, that Olds expects to build

150,000 cars next year, virtually doubling 1934 output.

Indications are that individual "gadgets" features will form a major element in next year's promotional campaigns by many factories. Hudson, whose cars will have steel tops and will be longer and roomier with more powerful engines, has its "electric hand" system of car control, details of which cannot be revealed now. Oldsmobile announces that it will have "the greatest safety feature of the past decade" and Dodge reveals that it will use more automatic controls than formerly.

A. Van Der Zee also told the Dodge sales force of "discarding something that may have been hailed as perfect as late as yesterday." Details of this move have not been disclosed, but it is generally assumed that it signifies that Dodge will have a new means of improving the ride to replace independent springing.

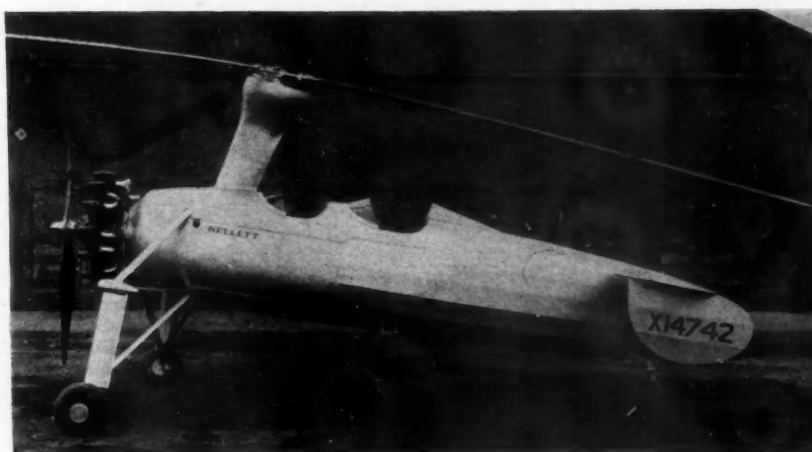
## Ford Building Begun

Work on the first of the buildings to expand Ford's steel production facilities got under way this week. The structure will house the extension of the hot strip mill and is to be completed within 60 days.

## To Preserve AC Exhibit

A large part of the exhibit of the AC Spark Plug Co. at the Century of Progress has been donated to the Museum of Science, Chicago, for permanent possession by that institution.

## Wingless Autogiro in Flight Tests



The above photograph shows a new Autogiro which was flight-tested recently by the Kellett Autogiro Corp. of Philadelphia. It has neither wings, ailerons nor elevators. The small rudder serves to counter-act the engine torque. Control is effected by changing the inclination of the rotor system by means of the conventional control stick, and this is said to give positive control during vertical descents. Power is supplied by a Jacobs 225 hp. engine. Top speed is 125 m.p.h.; minimum speed (level flight) 16 m.p.h.; climb 1000 ft. per min.; take-off 60 ft.; landing run 0 ft.

## Canadian Tariff Move Affects Car Makers

Change in Administration of "Draw-back" Item Will Cut Producers' Protection

Despite protests from automobile manufacturers, the National Revenue Department at Ottawa, Ont., has decided to make an important change in the enforcement of the drawback item of the Canadian tariff (1055) covering importation of automobile parts. The change, it is understood, goes into effect at once. This tariff item provides that automobile manufacturers may obtain refunds of 60 and 25 per cent of the tariff paid on imported parts, where 50 per cent of the finished product—the automobile—represents Canadian wages and/or material. The amount of the drawback depends upon the kind of part imported.

Hitherto the National Revenue Department has administered this tariff item in a broad way. Automobile manufacturers were permitted to claim the drawback on the basis of their total production. Hereafter they must claim it on the basis of each car. It is known that only two cars now made in Canada are eligible for the drawback—the Ford and the Chevrolet. It is understood that the made-in-Canada percentage of the Chevrolet is so great that the company was able to obtain the drawback on parts imported for other cars which it makes. The favorable balance on one car was used to raise the Canadian content of others. This will not be permitted and the decision, it has been learned, stands notwithstanding representations made by the manufacturers to the government.

The view of the department is that while the change may occasion hardship on manufacturers, the former system had to be abandoned for the simple reason that it was illegal. The Customs Tariff Act is very clear on this point. The drawback is to apply on goods or articles entering into the manufacture of motor cars—and not on the output of plants. The change, in reality, means an increase in the tariff on automobile parts which, conversely, involves a reduction in the production afforded the finished product. It is conceded at Ottawa that the results may work hardships on manufacturers. They will now have less net protection, perhaps, than they should have. But this, it is pointed out, is not the problem of the department but of the government and Parliament.

It is understood the department has suggested that the manufacturers take a case to the tariff board and ask for a recommendation that the loss in protection, due to the change in enforcement, be made good by a straight increase in tariff. This, it is suggested, might be done in time to have the matter remedied at the next session. In the meantime, it is said, production of cars will be very limited, this being the off-season.

## Automotive Broadcasts "Paradox," Witness Says

The situation of an automobile company spending \$2,000,000 over a radio net work to sell cars and then keeping prospective users home to hear the programs was termed a paradox by Irvin Caesar, New York song writer, when he appeared before the Federal Communications Commission during hearings in

## Chrysler Loses Tomato Growing Race to Farmers

Automobile manufacturing is one thing; dirt farming another, and "ne'er the twain shall meet." Walter P. Chrysler learned that when he lost a wager to Albanus Phillips, Cambridge, Md., canner. Mr. Chrysler bet Mr. Phillips he could raise 10 tons of tomatoes per acre on his Maryland estate. The forfeit was to be a diamond back terrapin dinner with the Detroit tycoon playing host if he lost. He did and must pay the wager, for he produced only 7.95 tons of the vegetable per acre. Several of the dirt farmers of the community ran far ahead of their noted neighbor, producing as high as 12.77 tons per acre. At least, so the Associated Press says.

Washington on the proposal to allocate more air facilities to religious and educational broadcasts.

Mr. Irvin told the commission that radio today is beginning to have a harmful effect upon the economic life of the country by "habituating" people, keeping them from wearing out their shoes, clothing and automobiles. He contended that the automobile company thus advertising was trying to sell cars to a public which it, by the broadcasts, "further habituates" to "disuse of the automobile" by keeping the buying public at home.

## Stout Will Build Rear Engined Cars, Report

DETROIT — That William B. Stout will build a number of rear-engined cars as custom-built vehicles next year, was indicated here this week.

It is assumed that the car will be patterned after the experimental job he has been developing for over a year and which was in an accident last week. It is stated that the car is characterized by light weight per horsepower, better road vision than with conventional cars, much more interior room for the same overall length as conventional design, and an airplane landing gear type of suspension.

## Federal Malleable Making New Replacement Drum

Federal Malleable Co., West Allis, Milwaukee suburb, has entered quantity production of a new replacement brake drum cast from its own formula with special heat treatment making it scoring-resistant. At present replacements are being made only for Ford passenger cars and light trucks, but a general line will be manufactured when conditions improve, it was stated.



The days of dusty roads, goggles and linen dusters were reviewed when Walter L. Marr (right), Buick's first chief engineer, visited his protege, F. A. Bower (left), present head of Buick's engineering staff.

## \$5,500,000 New Money in Studebaker Reorganization Plan; to Wipe Out Debts

Provision of approximately \$5,500,000 new cash for a reorganized Studebaker corporation is projected in a plan for reorganization of the company soon to be presented to the United States District Court for the Northern District of Indiana, according to Harold Hirsch, chairman of the reorganization committee.

The plan will provide for the elimination as such of the corporation's present funded and other debt amounting, with accrued interest, to more than \$23,000,000. The plan further contemplates, through an exchange into common stock of a new corporation, the retirement of the existing preferred stock amounting to \$5,808,200 par value. After consummation of the plan the aggregate of securities senior to the common stock of the new company will amount to \$6,867,698 in the form of new debentures to be created under the plan, as compared with a total debt and preferred stock of over \$28,000,000 of the present company.

Lehman Brothers, Field Gloré & Co., Hayden Stone & Co., Goldman Sachs & Co. and associates are underwriting the new cash requirements of the plan, which is proposed to terminate the receivership under which the company has been operating since March, 1933. The participation of these companies in the plan is being taken as an indication of the continued confidence of bankers in the future of independent automobile companies.

It is understood that the principal executive officers of the new company are to be Paul G. Hoffman and Harold S. Vance, two of the receivers who are now operating the business and who have been associated with Studebaker for many years.

The addition of the new funds is expected to result in net current assets for the reorganized company in excess of \$10,000,000. Real estate, plants, machinery and equipment will be written down from \$49,426,822 to \$15,423,325, the figure at which they will be considered in the new balance sheet.

The reorganization will be requested under the provisions of Section 77B, the new Federal corporate reorganization act, and involves the setting up of a new corporation which will issue new securities consisting of \$6,867,698 of 10-year 6 per cent debentures and 2,138,299 shares of common stock. This number of shares is approximately 325,000 less than included in the old corporate structure.

The basis for exchange of existing securities and claims for the new securities is understood to be as follows:

Holders of the \$14,861,050 of Studebaker 6 per cent gold notes; of the \$3,628,448 of bank debt; and of the approximately \$1,656,971 of merchandise and miscellaneous debt will be entitled to receive for each \$100 of such debt and accrued interest, 2.64 shares

of The White Motor Company common stock and 4 shares of the common stock of the new Studebaker Corporation.

Holders of Studebaker preferred stock will get 1 1/4 shares of the common stock of the new corporation for each share of old preferred stock; and in addition will be given the right to subscribe in respect of each share of old preferred for a combination consisting of \$15 of debentures and 2 2/9 shares of the new common stock upon the payment of \$15 in cash.

Holders of present Studebaker common will be entitled to subscribe in respect of each share of old common for a unit consisting of \$2.25 of debentures and 1/3 of a share of new common stock upon the payment of \$2.25 in cash. The book value of the new common, on the basis of the *pro forma* balance sheet set forth in the plan, will be over \$9 per share.

The plan involves complete separation of The White Motor Company, 95.11 per cent of whose common stock was acquired by Studebaker Corporation in 1932. The entire Studebaker holdings of White stock will be distributed to the present Studebaker creditors.

A creditors' petition which is being filed with the court immediately marks the official beginning of the proceedings for reorganization. The detailed plan will be submitted to the court as promptly thereafter as the proceedings permit.

### Bean, Hoffman, Vance Are Named Trustees

Paul G. Hoffman, Harold S. Vance and A. G. Bean, who have been receivers for the Studebaker corporation in charge of property and operations under the receivership ordered March 18, 1933, have been appointed temporary trustees by Federal Judge Thomas W. Slick. A



**Karl M. Wise**

Former Pierce-Arrow engineering director, who has become associated with Bendix Aviation Corp. as technical advisor and becomes vice-president in charge of engineering of Marshall Asbestos Corp.

hearing as to whether these trustees be appointed permanently or whether new trustees shall be appointed will be held Dec. 10.

At the same time Judge Slick issued an order permitting the Rockne Motors Corporation, a subsidiary of Studebaker, to reorganize on the same basis and appointed the same trustees to take charge of the operations.

The three trustees are acting as receivers at the present time under bonds of \$100,000 each. The bond was reduced Monday for the trusteeship and a joint bond of \$100,000 for the three was approved by Judge Slick. In addition he approved a joint bond of \$25,000

## The Studebaker Reorganization Plan

**CREDITORS:** \$14,861,050, 6 per cent gold notes, \$3,628,448 of bank loans and \$1,656,971 of merchandise and misc. debts, a total of \$20,146,021.

For which the plan offers 531,855 shares of White Common and 805,841 shares of new Studebaker Common. Present market value of White Common is about \$16 while book value of new Studebaker Common is given at \$9.

According to Dec. 31, 1933, Studebaker balance sheet, its White holdings amounted to about 594,000 shares. After the above distribution, there will remain about 62,000 shares.

**PREFERRED STOCK:** 58,082 shares.

For which the plan offers 72,602 shares of the new common plus the right to buy \$871,230 of new 6 per cent, 10-yr. debentures for an equivalent amount of cash with 129,071 shares of the new common as a bonus.

**COMMON STOCK:** 2,464,287 shares.

For which the plan offers the right to

buy \$5,569,289 of new 6 per cent, 10-yr. debentures for an equivalent amount of cash with 821,429 shares of new common as a bonus.

\*\*\*\*\*

2,138,299 shares of new common are authorized under the plan. Distribution as above will absorb 1,828,943 shares, leaving a balance of 309,356 shares.

\$6,867,698 new 10-yr., 6 per cent debentures are authorized by the plan. Distribution as above will account for \$6,440,519 of these, leaving \$940,519.

The sales of these debentures as provided by the plan will produce an equivalent amount of cash; namely \$6,440,519. It is understood the reorganization expenses will amount nearly to \$1,000,000. The amount of cash which the reorganized corporation will actually get from the plan will be about \$5,500,000.

The plant and property account is to be written down from \$49,426,822 to \$15,423,325.

for their operations in connection with the Rockne corporation.

Procedure of trustees will necessitate an accounting of all properties and funds which they have been administering as receivers, delivery of the properties by law to the new setup, and their discharge as receivers.

The action was brought on the petition of John A. Kline, Mattie C. Townsend and William F. Merritt, individual creditors of the corporation for a reorganization of the concern under Section 77B of the new federal corporate bankruptcy laws.

The court's order centers all legal activity in South Bend. Under the receivership in which the corporation has been operating there has been litigation in Illinois, Indiana, Ohio, New Jersey and New York. The present action wipes out all other court actions and brings all properties of the Studebaker Corporation in all those states under the sole jurisdiction of Judge Slick, according to attorneys of the corporation.

### Lavine Gear Invests \$50,000 in New Tools

Lavine Gear Co., Milwaukee, is completing an investment of upwards of \$50,000 in new tools and other equipment for the manufacture of its newly perfected "Ball-Drive" steering gear for passenger cars, supplementing its line of steering assemblies for trucks, tractors and other heavy duty applications. The Lavine company was established more than 23 years ago, and except for a period when it was called the Hannum Mfg. Co., has used its present name continuously.

## Publication of Car Inventory Data Urged in Report to Roper's Council

Collection and publication of monthly statistics showing factory sales, dealer stocks and retail deliveries of passenger cars, possibly on the bases of low, medium and high-priced classes, are recommended in a report made this week by the Committee on Statistical Reporting and Uniform Accounting for Industry to the Business Advisory and Planning Council for the Department of Commerce.

The report also recommends that similar statistics be made available on commercial vehicles, preferably classified on a capacity basis.

Other recommendations affecting the automotive industry are for data on production and shipments of internal combustion engines, of tractors and of tires and tubes. It is also urged that weekly motor vehicle production data be made available and that shipments of steels be classified into principal groups of consumers of which the automotive industry would be one.

The committee submitting the report consisted of Walter S. Gifford, chairman, Pierre S. duPont and W. A. Harriman. It is understood that officials of the Bureau of Foreign and Domestic Commerce are developing a program to effect the committee's recommendations on the foregoing data and on a long list of statistics of other industries which, it was held, would be useful to business.

It was the committee's opinion that

the government's role in the matter should be centered primarily upon the encouragement and promotion of the statistical activities of trade associations.

### Buick Announces Zone Managers in New Set-Up

In conjunction with Buick's reestablishment of its own field sales force (A. I. Nov. 10) a completely new zone organization began functioning this week. Home office changes were reported last week. The new zone managers and their assistants are:

New York, A. E. deLoach, J. E. Saul; Philadelphia, J. J. Costello, R. M. McCormick; Washington, A. H. Belfie; Buffalo, J. E. Nash, R. C. Aberth; Cincinnati, A. L. Jordan, C. A. Dickens; Detroit, H. A. Bonelli, T. J. Crosby; Pittsburgh, C. C. Edmonds, S. O. Braden; Chicago, O. L. Arnold, William H. Kay; Minneapolis, H. G. Krell, C. E. Childers; St. Louis, C. L. Alexander, O. V. Klem; Dallas, L. B. Strayhorn, Harry Lacy; Kansas City, D. C. Stern, W. B. Wallace; Atlanta, F. A. McIndoo, T. M. Privette and L. A. Folger; Memphis, H. G. Little, W. E. Hancock.

### U.S. Court Upholds Power Of Congress to Fix Prices

The power of Congress to fix prices by legislative means was upheld this week by Judge A. F. St. Sure sitting in the Federal District Court at San Francisco, when he allowed a temporary injunction against James W. McAllister and James W. McAllister, Inc., coast city automobile dealer, restraining the latter from violating the automobile dealers' code with regard to trade-in allowances.

In granting the injunction, sought by the government through the NRA litigation division, the jurist said: "The power of Congress to regulate interstate commerce is granted in broad terms and should not be restrictively construed. . . . This court, with propriety, cannot take the narrow holding that the legislative body is without power to regulate intrastate commerce as a proper means of achieving a desired regulation of interstate commerce".

The injunction followed a temporary restraining order previously allowed when the case first came into court and Mr. McAllister announced his intention to violate the provisions of the code covering trade-in allowances.

### Buys 8 Douglas Planes

Eastern Air Lines have ordered eight new Douglas Airliners from the Douglas Aircraft Corp. The planes are to be delivered by the end of this year.

### Modernity in Industry



A modern designer's studio and office designed by Lee Simonson and Raymond Lowey, designer of the Hupp Aerodyne bodies. This studio is on display in the east gallery of the exhibition of Contemporary American Industrial Art at the Metropolitan Museum of Art, New York.

Courtesy of Metropolitan Museum of Art.

November 17, 1934

Automotive Industries

## Automotive Orders Steel's Chief Prop

Market Price Structure  
Change Unlooked for in  
First Quarter of 1935

While there is general agreement that the steel market's price structure will remain virtually unaltered for first quarter 1935 deliveries, automotive consumers are eager to learn what changes in classifications and extras will be made effective as the result of the filing of flat steel prices for the coming quarter.

There has been considerable comment on the practice of certain consumers who buy sheets and cut them up into narrow strips, thereby faring better than if they covered their needs from the strip mills. The latter, of course, look upon this condition as an encroachment upon their market, and it is thought that there will be some sort of an adjustment of this situation through a revision of classifications.

Current orders from motor car manufacturers and parts makers continue to be the steel market's outstanding support. The American Iron and Steel Industry's figures indicate a further gain of 14 per cent in this week's operating rate, which is also a shade higher than that in the corresponding week of 1933.

Finishing mills in the Mahoning and Shenango valleys are operating at the best rate since June. Gains are noted in all of the other steel-making districts, with much emphasis laid on the large number of small orders coming in, indicating general improvement in the demand and furnishing a healthy foundation for the building up of sufficient backlogs to make possible more orderly production schedules.

**Pig Iron**—Blast furnace sales agents are greatly encouraged as the result of a few inquiries for 1935 deliveries ahead of the time when Code regulations permit them to book 1935 business. Carload buying continues, however, to predominate in current transactions, melters calling for slightly more iron than they did earlier this month.

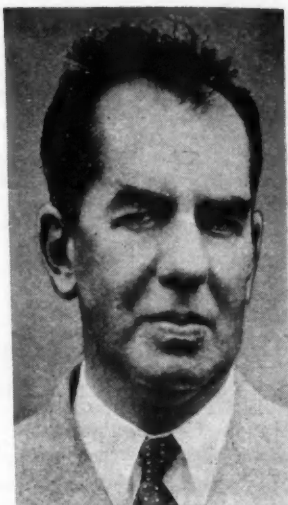
**Aluminum**—The market for secondary aluminum ingots is more animated than it has been in some time, a good many automotive consumers stocking reasonable tonages in anticipation of their needs during the remainder of the year. As the result of the recent advance in ingot prices, scrap commands correspondingly higher prices.

**Copper**—Price reductions on certain copper and brass products, announced by the leading manufacturer, furnished a certain amount of badly needed stimulation to the market and a moderately better demand for Blue Eagle copper from fabricators was noted.

**Tin**—A slightly firmer tone in the Sterling exchange market caused Straits tin to open a shade firmer on Monday, with the spot market quoted at 51.35c. The International Tin Committee will meet in Paris on Nov. 22.

## Cleveland to Stage 8-Day Trade and Industrial Fair

An eight day trade and industrial fair is to be staged in Cleveland beginning Dec. 29 and running to Jan. 5 to demon-



**A. W. Herrington**

President of Marmon-Herrington Co., Inc., who has just returned from Europe. He reports a definite air of optimism and prosperity abroad, especially in Great Britain.

strate the progress of Cleveland and northern Ohio in the swing toward recovery, according to the sponsors. Mayor Harry L. Davis is general chairman of the exposition.

Lincoln G. Dickey, who will serve as managing director, has announced that action will be the keynote of the show, and that processes of manufacture on the exhibition floor will be stressed. The show is said to have the backing of 200 business and civic leaders and every important organization in Cleveland.

## Moore Heads Timken Industrial Division

The Timken Roller Bearing Co. has promoted Whitley B. Moore to general manager of the Industrial Division. At the close of the war, Mr. Moore joined the Timken engineering staff. He became interested in the selling phase of engineering. In 1921, he went to the Pacific Coast in charge of sales in that territory. In 1924 he was brought back to Canton to take the position of assistant general sales manager of the Industrial Division. In 1930 he was made sales manager, and has remained with the company in that capacity up to the time of his present advancement.

## Fleetwings Buys Keystone Plant at Bristol, Pa.

Fleetwings, Inc., pioneers in shotweld stainless steel construction for aircraft, have purchased the plant formerly owned by Keystone Aircraft Corp. at Bristol, Pa. A portion of the plant will be occupied by Hall Aluminum Aircraft Corp., builders of large flying boats for the U. S. Navy.

## Ban on All Coercion Gains Wider Support

NAM Pushing Program  
in State Legislatures

That employees should be free to strike or keep on working, and that they should be free of coercion from any source in determining what organization, if any, they will join and who will represent them in collective bargaining, are contentions that are gaining steadily.

In a radio broadcast last week, Secretary of Commerce Daniel C. Roper said: "If we wish to exercise the right of not working, that is to strike, this right should be safeguarded; but in so doing we should defend the right not to strike, that is, the right to work without molestation."

Then over the week-end the United States Chamber of Commerce revealed a list of proposals for legislation to take the place of NIRA, on which it is polling its membership. These proposals would have definite provisions put in any labor clauses to assure, in collective bargaining, representation for all groups of employees as well as the right of individual contract. They would have the law explicitly prohibit coercion from any source, and would extend the present condition that employment of any person is not to be made dependent on membership in one type of employee organization to include membership, or non-membership, in any labor organization.

In the A. & P. settlement, it was stipulated that "there must be no coercion or intimidation by any of the unions to compel any man to join a union." The intent of this statement is the same as Principle 2 of the automobile settlement, the second sentence of which says: "The Government's only duty is to secure absolute and uninfluenced freedom of choice without coercion, restraint, or intimidation from any source."

Moreover, the National Association of Manufacturers is currently engaged in an effort to get state legislatures to enact laws incorporating this and other limitations on the activities of labor organizations. The NAM program would make sympathetic strikes and lockouts illegal, would make employers and unions equally responsible for the observance of contracts, would make picketing illegal when conducted in such a manner as to coerce employees or customers, would prohibit closed shop contracts and would forbid the "check-off" without written consent.

## A. J. Maginnis

A. J. Maginnis, for many years an advertising representative of the Chilton Company publications in the Ohio territory, died last week at his home in Portland, N. Y.

## Future of Commercial Units Meeting Topic

Laws, Fuels, Diesels  
Discussed at Newark  
Transportation Session

The Regional Transportation Meeting, held in Newark, N. J., last week under the sponsorship of the Metropolitan Section of the S.A.E., concerned itself principally with approximating current developments and gaging their possible future effects on commercial vehicle operations. Topics ran the gamut of legislation, fuels, Diesels and refrigeration, the latter including air-conditioning.

Somewhere in the neighborhood of 400 men interested in commercial transportation attended the various sessions, and several thousand braved the chilly atmosphere of the Armory to see the truck show put on by some 30 manufacturers.

At the Diesel session, N. Mitchell, resident engineer of the Asiatic Petroleum Co., Ltd., London, presented a paper in which he sketched Diesel development in England. For relative operating costs he drew entirely upon the experience of the London General Omnibus Co. His conclusion was that "from the point of view of running costs, the compression ignition engine is easily cheaper than is the gasoline engine. From the point of view of maintenance, the advantage is a debatable point." Comparative costs which were quoted plainly showed that so far as the past was concerned there was no room for debate because Diesel maintenance costs were distinctly higher. Debate enters only when the current trend is considered. "Recent experience shows," he said, "that the maintenance costs are falling as the fleet is increased and becoming more standardized."

The interest in Diesels was nowhere more apparent than at the show, where the Diesel exhibits attracted the largest crowds.

Propane and butane came up for speculative treatment both as fuels and as refrigerants. W. Z. Friend and E. O. Beckwith, of the Phillips Department of the Phillips Petroleum Co., gave proof of the superiority of these liquefied gases over gasoline. They agreed, however, that considering the economic factors involved they cannot take the place of gasoline as a universal fuel. They offer greatest advantages as motor fuels in large stationary engines, high-speed rail cars and rail trains where high power output per unit of engine weight is a very important factor.

Propane as a refrigerant for trucks was covered by Guy L. Tinkham of the McCord Radiator & Mfg. Co. He outlined the refrigeration-fuel system which his company has developed under Shell patents and concluded that their system, by contrast with other refrigerating methods, "is relatively inexpensive, has no operating expenses, takes up no cargo space, and adds practically no weight. Servicing is negligible, since it is confined to a few valves, with no moving parts in the ordinary meaning of the phrase."

Legislation received heavy emphasis as is its due considering its burdensome effects on highway transport. Major Roy F. Britten, of the National Highway Users Conference, and General H. B. Markham, director of the American Petroleum Institute, threw down a barrage of warnings regarding the objectives of legislative sessions in 44 States next year. (See Nov. 10 A.I. page 571). James S. Marvin, assistant general manager of the

Automobile Manufacturers Association declared "legislative activities conducted by railroads are futile," and ventured the prediction that "we will find railroads among those recommending repeal of laws that they were instrumental in having enacted."

Ted V. Rodgers, president of the American Trucking Associations, Inc., admitted that some form of permanent control of the trucking industry is inevitable, but he felt the question did not resolve itself to an alternative of Federal regulation or the code. "I am inclined," he said, "to the idea of Federal regulation and the code."

## To Ask Congress Regulate Motor Vehicles—Eastman

Legislation for regulation of motor vehicles will again be recommended at the forthcoming session of Congress. This was made known by Joseph B. Eastman, Federal Coordinator of Transportation, in his address Tuesday before the National Association of State Utility Commissioners, which will end its four-day session today with final conclusions and recommendations. Mr. Eastman did not indicate the character of his recommendations, but it is assumed they will largely follow the lines of previous recommendations he has made. His address was similar to previous talks recently made before motor vehicle and railroad organizations.

The meeting also heard a report by the committee on motor legislation as well as discussion of the Kansas Port of Entry Law and the Tennessee Law limiting weights of trucks on highways of that State.

## John M. Howard

Funeral services for John M. Howard, southern sales manager for General Motors Truck Corp., were held last Saturday. He was 42 years old. Mr. Howard is survived by his widow, three children, Mrs. Ethel M. Huntwork, Dudley J. Howard and Elizabeth Ann Howard, his mother, two sisters and one brother.



John M. Howard

## Rotating Service Station Developed by Colonial Co.

The revolving service station, known as Rotary Servicecenters, a development of the Colonial Beacon Co., has made its appearance in New York where two of this new type station are being constructed.

According to the Colonial Beacon engineers the motorist drives into the station, which is entirely enclosed, onto a turntable and the car can be serviced with gasoline, oil and water within two minutes. If the car requires greasing or oil changing this operation is done in another part of the station. Backing and maneuvering into position at gasoline pumps is eliminated, the engineers state. The two stations are expected to be in operation the latter part of this month.

## Model Changes Slow Production

(Continued from Page 597)

with the result that dealers' inventories of new cars and trucks will be reduced 50,000 to 75,000 units.

Plymouth sales volume in the first ten months of this year amounted to \$228,660,669, an increase of 44 per cent over the same period last year, according to a factory statement. Shipments in the first 10 months numbered 300,018, a gain of 26.6 per cent over the corresponding 1933 period. Plymouth dealers are said to number 11,635 at present, which would mean an average gross purchase from the factory of \$19,600 per dealer.

Returns from 22 States for the month of October, 1934, show new car registrations of 55,080 as against 49,221 a year ago, a gain of approximately 12 per cent.

Retail sales of Lincoln motor cars in October were 50 per cent greater than in October, 1933. During the first 10 months of the year, Lincoln registered more than 50 per cent of all sales in the 12-cylinder fine car field.

With an increase of 44.2 per cent in Cadillac-LaSalle sales over the same month last year, the Cadillac Motor Car Company continued through October the sales increase which has marked every month of its 1934 activity.

Retail deliveries by Dodge dealers during the week ending Nov. 3, amounting to 4,062 passenger cars and trucks, brought the total of so far reported 1934 sales up to 213,800 vehicles—the figure comprising 83,123 Dodge passenger cars, 89,378 Plymouths, and 41,299 Dodge commercial cars and trucks.

Used-car sales during the same report week were 4,230 passenger cars and 707 trucks, a total of 4,937 used-vehicle deliveries.

Domestic and foreign shipments of Dodge passenger cars and trucks for the first 10 months of the present year are given as 102,663 Dodge passenger cars and 57,097 Dodge trucks, a total of 159,760 which, compared to the foreign and domestic shipment volume of 1933, denotes an increase of 40,051 vehicles.

## Automotive Programs Aid Mich. Industrial Output

Expansion programs of several automobile companies involving outlays of many millions of dollars have materially aided industrial production in the Detroit area, according to a survey recently completed by the Purchasing Agents' Association of Detroit. This organization represents a buying power second to none in the country.

The survey indicates that industrial groups all over Michigan are preparing themselves for a vastly increased production in 1935 over the current year. In the last 30 days, it is pointed out, there has been a decided upward trend in business which presages good business throughout the remainder of the year. Fourteen per cent of the reports included in the survey indicate that buying is being done on a one month basis; 14 per cent show two months ahead; 25½ per cent show purchasing being done three months in advance, while 5 per cent show buying six months in advance.

## Chrysler Wins Floating Power Patent Suit

Judge J. Foster Symes, U. S. District Court, Denver, Col., has handed down a decision holding that the Chrysler floating power engine mounting construction does not infringe engine mounting patents of Roland S. Trott, according to a Chrysler announcement. Mr. Trott's patents are said to involve the use of spring. It is reported that he will appeal the case.

## Campbell-Ewald Wins Outdoor Poster Prizes

First and third major prizes for excellence in outdoor poster design were awarded to Campbell-Ewald Company at the Fifth Annual National Exhibition of Poster Art in Chicago recently. In addition four out of the 11 honorable mention awards were won by Campbell-Ewald.

The year's first prize was for a Pontiac



**Thomas H. Stambaugh**

Now general service manager of Hudson, whose appointment was announced recently by W. R. Tracy, Hudson general sales manager.

Motor Company poster captioned "So much more for so little more," and third prize was for a poster for the Chesapeake & Ohio Railroad captioned "Sleep like a kitten." H. L. Towle, creative head of the Campbell-Ewald Outdoor department, received medals for designing these sheets. The four honorable mentions were given for boards designed for Chevrolet, Cadillac, U. S. Rubber and A C Spark Plug Co.

## Faulkner on Two Weeks Tour of Major Markets

Roy H. Faulkner, Auburn president, has started on a 3000 mile tour of the country to visit Auburn dealers and distributors in the major markets of the country. It is planned to complete the tour in about two weeks' time.

Mr. Faulkner will visit Cincinnati, Dayton, Columbus, Pittsburgh, Cleveland, Buffalo, Rochester, Syracuse, Albany, New York City, Springfield, Wooster, Boston, Hartford, New Haven, Bridgeport, Conn., Philadelphia, Baltimore and Washington. Some smaller cities also will be included in the itinerary.

## GM's 10 Mos. Overseas Sales 83% Over Last Year

General Motors sales in overseas markets for the first 10 months of this year have increased 83.7 per cent over the corresponding figure of 1933, according to figures released by the corporation. Total unit sales for the January-October period were 187,827, comparing with 102,273 for the corresponding period of last year. These figures include cars and trucks of GM make from American, English and German sources.

According to the corporation the heaviest proportion of increase is accounted for by gains in the American-source volume, and it is stated that GM's percentage of total automotive consumption in the overseas world is now in excess of 22 per cent of the total computed against cars and trucks of all sources including United States, English, French, German, Italian and all others. The largest proportion of the increase is accounted for by gains in the U. S. production for foreign sale of Chevrolet, Buick, Oldsmobile, Pontiac, LaSalle and Cadillac.

## MEMA Adds 23 Members

Twenty-three more manufacturers have been added to the rolls of the Motor and Equipment Manufacturers Association as the result of recent approval by the membership committee. This brings the total new affiliations with the MEMA up to 75 for the current year.

The new members are:

American Can Co.; Henry Cole-F. C. Hersee Cos.; Howard Crawford Co.; Edde Mfg. Co.; International Piston Ring Co.; A. B. Chance Co.; Norwalk Tire & Rubber Co.; Pier Equipment Co.; Sleetex Co.; Wohler Corp.; A. S. Campbell Co., Inc.; Continental Can Co.; Eclat Rubber Co.; Galena Oil Corp.; Miller Rubber Co.; Nitair Valve Oiler Mfg. Co.; Pick Mfg. Co.; Safety Signal Devices Co.; Valvoline Oil Co.; Wyzenbeek & Staff, Inc.; Heiz & Heiz, Inc.; Emark Battery Division, Thos. A. Edison, Inc.; Edison Splitdorf Corp., Thos. A. Edison, Inc.

## Flint Police Receive 10 Millionth Chevrolet

The ten millionth Chevrolet, a four-door standard sedan, rolled off the assembly line at Flint this week. It was given to the city of Flint for safety patrol work. At a luncheon following, president M. E. Coyle estimated 1934 Chevrolet production at 850,000 units and the number of Chevrolets in use at 5,000,000.

## Gregor Corp. Making Lower Priced Planes

Gregor Aircraft Corp. has leased shop space at Roosevelt Field, Garden City, L. I., N. Y. Production has been started on five airplanes in the lower price class.

## Nine Months' Earning Statements

Car Companies	1934	1933
8 Companies Previously Reported.....	+\$95,214,859	+\$88,166,655
Packard .....	5,348,409	487,084
Mack Trucks .....	167,251	567,211
Reo .....	907,483	1,078,593
Total—11 companies .....	+\$89,126,218	+\$86,033,767
Other Automotive Companies	1934	1933
28 Companies Previously Reported .....	+\$20,828,766	+\$12,417,273
Briggs & Stratton .....	541,941	137,925
Continental Diamond Fibre .....	78,324	145,065
Wright Aeronautical .....	838,251	508,418
United American Bosch .....	137,489	41,079
Stewart-Warner Corp. ....	565,782	1,067,894
Total—33 companies .....	+\$22,835,905	+\$11,901,736

# Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

General business continued to improve last week. The more seasonal weather stimulated retail sales, and wholesale buying was on a larger scale. Buying of Christmas goods thus far indicates that the holiday business will be the best in four years.

## Car Loadings Decline

Railway freight loadings during the week ended Nov. 3 amounted to 612,457 cars, which marks a decline of 11,795 cars below those during the preceding week, a decline of 1769 cars below those a year ago, and an increase of 25,155 cars above those two years ago.

## Bituminous Mining Level

Production of bituminous coal during the week ended Oct. 27 amounted to 7,115,000 tons, as against 7,100,000 tons during the preceding week and 7,380,000 tons a year ago.

## Current Production Up

Production of electricity by the electric light and power industry in the United States during the week ended Nov. 3 was 5.4 per cent above that in the corresponding period last week. The current figure was slightly below that for the preceding week.

## Lumber Shipments Move Up

Lumber shipments during the week ended Nov. 3 were almost as large as

the average for the four weeks preceding, while production was 13 per cent below the average for that period, and new orders showed a decline of 6 per cent.

## Flour Milling Gains

Production of flour in the United States during October totaled 6,023,600 barrels, as compared with 5,730,998 barrels during the preceding month and 5,399,712 barrels during the corresponding period last year.

## Store Sales Steady

The Federal Reserve Board's preliminary adjusted index of department store sales for October stood at 75, as compared with the same figure for September and 79 for August. The October volume of sales increased by about the usual seasonal amount.

## Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended Nov. 10 stood at 78.9, as against 78.7 the week before and 78.8 two weeks before.

## Federal Reserve Statement

There was very little change in the consolidated statement of the Federal Reserve banks for the week ended Nov. 7. Holdings of discounted bills, bills bought in the open market, and government securities remained unchanged.

## U. S. Measures Effects of Side Winds on Cars

A substantial reduction in the wind forces acting on an automobile when the car is driven at 50 m.p.h. with a wind of 30 miles per hour in a quartering direction, can be obtained by moderate streamlining, according to R. H. Heald, aerodynamics section of the National Bureau of Standards. The yawing moment, or tendency of the car to turn sideways, however, will be considerably increased, but this may possibly be reduced by using fins.

Experiments were made in one of the Bureau's wind tunnels on three automobile models having substantially different body shapes. The measurements were made for various angles of relative wind, from 0 to 180 deg. Estimates, based on the model measurements, indicate that when an automobile of conventional body shape, geometrically similar to the model used in the tests, is driven at 50 m.p.h.

in a 30 mile quartering wind, forces and moments of the following order of magnitudes may occur: lift, decreasing the traction, 400 lb.; longitudinal force opposing the motion of the car, 230 lb.; lateral force pushing the car sidewise, 350 lb., yawing moment tending to turn the car off the road, 550 lb.-ft., it was stated.

For a moderately streamlined automobile the forces and moments, under the same conditions of wind speed and car speed, are estimated to be: Lift, 340 lb.; longitudinal force, 90 lb.; lateral force, 170 lb.; and yawing moment, 770 lb.-ft.

## Col. C. C. Mengel

Col. C. C. Mengel, president of the Mengel Co., Louisville, Ky., died suddenly at the Louisville Country Club Thursday night, Nov. 8. He was 78 years old. One of the subsidiaries of the Mengel Co. is the Mengel Body Co., manufacturers of automobile body parts.

Death was caused by heart disease from which Col. Mengel had been suffering for about a year. Known as Louisville's outstanding industrialist, Col. Mengel is survived by three daughters, two sons, a sister and nine grandchildren.

## Plan Code Luncheon

The National Code Authority of the wholesale automotive trade has arranged a luncheon meeting at the Hollenden Hotel in Cleveland for Wednesday, Nov. 21, exclusively for members of the district advisory committees and National Code Authority who will be attending the Automotive Industries Show.



W. H. Loudon

Whose appointment as parts and accessories merchandising manager of Oldsmobile has been announced by D. E. Ralston, vice-president and general sales manager.

## Briggs Mfg. Co.

The Briggs Manufacturing Co. reports a net profit for the first nine months of the current year of \$541,941, which compares with \$187,943 for the corresponding period of last year.

## Earle G. Bott

Earl G. Bott, vice-president and general manager of the Blackhawk Mfg. Co., Milwaukee, died last week following an illness of three weeks. He was 40 years of age. Mr. Bott joined the Blackhawk company in 1920 in a minor capacity and rose to its most important executive positions. He was group chairman of the wrench manufacturing industry, and an official of the Automotive Jack Institute. During the World War he was instructor of ignition in the Motor Transport Division and later in the Officers Training Corps at Camp Grant, Rockford, Ill.

# Jones' Statement Explains RFC Policy On Direct Loans to Solvent Industries

RFC's authority and policy on direct loans to solvent industries in need of funds for the payment of labor or for the purchase of materials incident to normal operations, were explained in a statement issued last week by Jesse H. Jones, chairman of the RFC board. At Mr. Jones' request we print the statement in full:

Industrial concerns, eligible to borrow funds from the Reconstruction Finance Corporation for the purpose of maintaining and increasing employment, have not yet taken full advantage of the assistance which the Corporation is prepared to extend.

Congress provided that such loans might be made to industrial and commercial businesses subject to the following requirements:

(1) That the business must have been established prior to Jan. 1, 1934.

(2) That such loans be adequately secured.

(3) That maturity of loan must not exceed five years.

(4) That borrower must be solvent at the time of disbursement of the loan.

(5) That credit at prevailing bank rates for loans of the character applied for not be available at banks.

(6) That reasonable assurance of increased or continued employment of labor be given.

(7) That the aggregate of such loans to any one borrower made directly or indirectly shall not exceed \$500,000.

(8) That such other provisions as the Reconstruction Finance Corporation may impose be complied with.

The Directors of the Reconstruction Finance Corporation feel that these loans should be made in such a way that the available funds can be utilized as fully as possible for the advance of permanent business recovery. This objective can be accomplished best if the moneys loaned by the Corporation are used principally to supply funds for the payment of labor and the purchase of materials incident to the normal operation of the business, rather than for the payment of existing indebtedness, though in exceptional cases a small part of the loan may be used for payment of existing debts or for the financing of construction, improvements and/or repairs that do not materially increase capacity. When a loan is to be used primarily for labor and materials, a small portion of the loan may be applied to these latter purposes when necessary to assure ordinary and efficient operation.

The Corporation will make loans in co-operation with banks, or by the purchase of participations in loans made by banks. In cases of national banks, only the bank's participation in such loans, rather than the full amount of the loan, must be within the legal limit which may be loaned to any one customer, and accordingly this plan will allow substantially greater credit to be extended through such channels to borrowers who are already borrowing up to their legal limit.

The depression years have left many enterprises in very much involved and weakened positions, but our experience has led us to believe that where present creditors are willing to cooperate by a proper adjustment of existing debt structure, many such enterprises may be safely supplied with additional funds that will enable continuing operations on a sound basis.

Accordingly, we suggest to industrial con-

cerns, to which credit at prevailing bank rates for loans of such character is not available but which can offer adequate security (even though such security may be frozen and therefore not generally acceptable to banks) and which can profitably use additional funds for labor and materials, that they communicate with the local loan agency of this Corporation serving the territory in which such concerns are located.

Each Loan Agency of the Corporation will, when requested, assist and advise with applicants in determining their eligibility and in the preparation of applications.

## Rim Inspections Increase

Approximately three million more rims were inspected during the January-October period of this year than during the corresponding months of 1933, according to the Tire and Rim Association. The ten months' total for this year is 10,558,-

165 comparing with 7,580,587 for last year. During October 629,878 rims were inspected against 522,829 for the same month last year.

## Miss Graham Married

Miss Virginia Graham, daughter of Mr. and Mrs. Joseph B. Graham, and John A. Healey were married last Monday by Msgr. Francis Ryves, of Evansville, Ind. The ceremony was performed in St. Aloysius Church in Detroit.

## Trade Committee Approved

The National Recovery Administration has approved the trade practice complaints committee of the commercial vehicle body industry. Members of the committee are: William R. Bishop, Shad-bolt Body Co.; George W. Friedrich, Keystone Wagon Works; John Theurer, Theurer Wagon Works; Peter Wendel, Peter Wendel and Sons; Thomas Wright, The Thomas Wright Co.

## CALENDAR OF COMING EVENTS

### SHOWS

Cleveland (Automotive Service Industries) .....	Nov. 19-23
New York Automobile Show .....	Jan. 5-12
Los Angeles Automobile Show .....	Jan. 5-13
St. Louis Automobile Show .....	Jan. 6-12
Cincinnati Automobile Show .....	Jan. 6-12
Washington Automobile Assoc., Automobile Show .....	Jan. 12-19, 1935
Toronto, Canada Automobile Show, Jan. 12-19	
Newark, N. J. Automobile Show .....	Jan. 12-19
Buffalo, N. Y. Automobile Show .....	Jan. 12-19
Cleveland Automobile Show .....	Jan. 12-19
Milwaukee Automobile Show .....	Jan. 12-19
Detroit Automobile Show .....	Jan. 12-19
Brooklyn, N. Y. Automobile Show .....	Jan. 14-19
Philadelphia Automobile Trade Assoc. —Automobile Show .....	Jan. 14-19
National Motor Boat Show, New York .....	Jan. 18-26
Columbus, Ohio Automobile Show .....	Jan. 19-24
San Francisco Automobile Show .....	Jan. 19-26
Baltimore—Automobile Show .....	Jan. 19-26
Boston Automobile Dealers Assoc.—Automobile Show .....	Jan. 19-26
Pittsburgh, Pa. Automobile Show, Jan. 19-26	
Hartford, Conn. Automobile Show .....	Jan. 19-26
Syracuse Automobile Show .....	Jan. 19-26
Nashville, Tenn., Automobile Show .....	Jan. 20-26
Rochester Automobile Show .....	Jan. 21-26
Chicago Automobile Show .....	Jan. 26-Feb. 2
Montreal, Que., Automobile Show .....	Jan. 26-Feb. 2
Springfield, Mass. Automobile Show, Jan. 28-Feb. 2	
Omaha Automobile Show .....	Feb. 3-9
Kansas City, Mo. Automobile Show .....	Feb. 9-16
Denver, Colo. Automobile Show .....	Feb. 10-23
Bethlehem, Pa., Automobile Show .....	Feb. 18-23
Evansville, Ind. Automobile Show .....	Feb. 23-27
Minneapolis Automobile Show .....	Mar. 9-16
Mankato, Minn. Automobile Show .....	Mar. 16-23

### MEETINGS

American Petroleum Institute, Dallas, Tex. ....	Nov. 13-15
Society of Automotive Engineers—Chicago—(Tractor & Industrial Power Equipment Meeting)....	Dec. 5-6

### ANNUAL MEETINGS

Natl. Automotive Parts Assoc., Detroit .....	Nov. 13-17
Natl. Standard Parts Assoc., Cleveland .....	Nov. 16-17
Motor & Equipment Manufacturers Assoc., Cleveland .....	Nov. 19-23
American Society of Mechanical Engineers—New York .....	Dec. 3-8
Society of Automotive Engineers—Annual Banquet—New York .....	Jan. 7
Motorcycle & Allied Trades Assoc., New York City .....	Jan. 9
American Engineering Council, Washington, D. C. ....	Jan. 10-12
Society of Automotive Engineers—Annual Meeting—Detroit .....	Jan. 14-18
American Roadbuilders Assoc., Washington, D. C. ....	Jan. 22-25
Automotive Parts & Equipment Mfrs., Inc.—Chicago .....	Jan. 29

### CONVENTIONS

International Foundry Congress, Philadelphia .....	Oct. 22-26
American Foundrymen's Assoc., Philadelphia .....	Oct. 22-26
National Foreign Trade Council, New York .....	Oct. 31-Nov. 2
International Acetylene Assn., Pittsburgh .....	Nov. 14-16
Motor & Equip. Wholesalers Assoc. Annual Convention—Cleveland, O. ....	Nov. 16-17
National Standard Parts Assn., Cleveland .....	Nov. 16-17
Motor & Equipment Mfrs. Assn., Cleveland .....	Nov. 16-17
National Automobile Dealers Assn., Detroit .....	Jan. 14-15

### EXPOSITION

Natl. Exposition of Power & Mechanical Engineering (Biennial) New York, N. Y. ....	Dec. 3-8
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### FOREIGN SHOWS

International Aeronautic Exposition, Paris, France .....	Nov. 16-Dec. 2
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# The Horizons of B

## Right or Left?

**F**IRST hasty interpretations of the elections revealed many observers who regarded it as a mandate for the President to go further to the left. This liberalism toward which the President is expected to turn includes expenditure of public funds to "prime the pump," prodigious relief disbursements, the further restraint of wicked business executives and inflation.

It is not certain that the election means any of these things. The people who vote are moved by many motives. Unquestionably the group which believes with John Maynard Keynes and the La-Follettes that the country may spend its way back to prosperity regards its vote for the President as a mandate for public works. The 4,400,000 families whose distress is allayed by Federal aid probably cast their votes with an approach to unanimity for the New Deal candidates. They have everything to gain and little to lose through a further application of Federal charity. The school which interprets the depression in terms of personal error and business turpitude manifestly will pray for further penalties upon business. Then there are the voters who think that the mule of the Democratic party can be led toward prosperity's goal by dangling a wad of greenbacks, model 1934, before its nose. Each prophet sees in the New Deal the authentication of his own panacea.

### No Inflexible Commitments

It is clear to those who have studied the record of the past 18 months objectively that the Administration stands committed to no single reform or recovery prin-

ciples. It has certain inclinations which it might of its own accord follow. Yet these are not embraced so firmly but that they can be compromised to meet opposition. Political expediency rather than principle in the end determines the conduct of the government. For that reason the victory at the polls should not be regarded prematurely as a national commitment to further departures from the tested principles of the past.

If the election carries a any single, clear message it is that Franklin Delano Roosevelt is still the choice of the overwhelming majority of our voting citizens. His dictatorship of personal charm operating through astute opportunism is what the people of the United States want. It is possible to build a strong case tending to prove that the country may regret its approbation, that it may in the long run produce more mischief than benefit. Be that as it may, the fact of present approval cannot be questioned.

### Critical Talent Wasted

During recent months there was circulated in New York City a burlesque platform of the Democratic party based upon its conduct since March 4. The document was the work of a clever satirist in one of the financial houses. This apocryphal platform contained planks repudiating the government's gold obligations, pledging the destruction of private enterprise through government competition, handing management over to the tender mercies of labor organizers, etc. The implication was that if the land had known all the dreadful things the party would do it would

never have won the 1932 election.

In the light of what has just happened the authors wasted their time. The country knowing all these things bestowed its blessing upon the Administration. The petty tyrannies of the NRA, the waste of public funds through extravagant relief, the mounting public debt, the epidemic of labor strife, the failure of recovery, all these things notwithstanding, the public has told the government "Ye have served well." Though the conservative may question the judgment of the majority, under the conditions of democratic government he has not the right to question the public will.

### The Threat of the Wild Men

Congress has gained a number of wild men in the election and lost some of its level heads. It by no means follows that the next Congress will enact legislation any more radical than that which has already been passed. There is, first of all, the compelling restraint of the President. Insofar as the election had a general issue it revolved about the support of the President. Thus the airbeaters who take their seats in the new Congress owe their election not to their carbonic oratory or fanciful schemes but to their alignment with the President. "Vote for me and you vote for the President." This was the winning campaign slogan. These men can be trusted not to antagonize the bait which caught enough voters to elect them. The expansion of government activities, the further appropriation of funds to carry on public works, the continuation of relief, all provide the jobs and favors which constitute the politician's flypaper. Though some of these spirited newcomers may chafe in the White House harness, there is a saving practical appreciation that the grocer must be paid.

# Business

## Limited Opportunities for Further Experiments

Another assuring circumstance is the fact that the last Congress covered so much ground that the area of experimentation is now seriously restricted. Senator Fletcher announced that the Senate Banking and Currency Committee was through with further banking legislation for the time being. This applies not only to the Banking Act of 1933 but to the Federal Securities Act of 1933 and the Securities Exchange Act of 1934. Much of this legislation to be sure is of an experimental character. Even so, the time which has elapsed since it went into effect has been altogether too brief to provide the basis for amendment or new legislation. Sentiment for a national bank to take the place of the 12 Federal Reserve banks to which the Treasury could sell bonds without embarrassment has subsided. It may be revived if the government experiences difficulty with its financing or the President is forced to throw inflationists the sop of a new inflationary device. Much depends on the course of events after the new solons assemble.

### Looking at the Inflation Record

In addition to the direct resistance which the President can offer to the wilder inflationists he can point to the negative results of the two attempts at monetary control which have already been made. The first of these is the sensational purchase of gold at advancing prices until the yellow metal had been raised from \$20.67 an ounce to \$35.

The policy, temporarily, proved a direct stimulus to our exports. As such it has already dissipated much of its potency. Furthermore, this method of promoting foreign trade is a dangerous game, since the other hands can also play

deuces wild with decks that have a limitless supply of deuces. The hope of inflation gave business and the stock market an entirely spurious upward impulse. "Improvement" was fevered, the gains of the mushroom variety. This foundation of illusion vanished in the fall of 1933 and business since has been far from satisfactory.

The experiment cast a heavy shadow upon the good faith of the government. The seizure of the gold was a violation of an established property right. The explanation that the government appropriated it because there was not enough to go around for all the debts which had to be paid in gold was an elegant piece of transparent sophistry. There had never been enough gold to cover all the obligations payable in that metal any more than there are enough yardsticks to cover all the lengths expressed in that unit or enough pound weights to equal the aggregate mass measured by the pound.

Worse than this, however, is the failure of the adventure to raise the price level, restore jobs and improve business. True, things cost more, but a strong brief may be presented tending to prove that the change in the gold dollar had little to do with this. Nature stepped in with the drought. The AAA persuaded farmers to reduce acreage. Labor demanded higher wages and employers to survive had to ask for higher prices, even though this resulted in curtailed activity.

Thus, if the Warrenites supported by the Committee for the Nation rap at the White House door and ask for another dose of medicine the President may well ask them what benefits, if any, the last prescription afforded. Not

that these boys will not have a pretty sales talk all prepared. It simply does not seem that the prospect can be sold a second time.

### The Sad Case of Silver

More convincing even than gold is the experience with silver. The silverites have had a singleness of purpose, an eloquence and persistency of advocacy whose counterpart cannot easily be discovered in American politics. They knew what they wanted and, prosperity or depression, they never wandered far from the line of battle.

The most familiar shell was the well-known Oriental purchasing power argument. The East uses silver for money. Raise the price of silver and you raise the buying power of 400,000,000 people. These fellows never get enough to eat. The American farmer raises more food than his fellow citizens can consume. Voila. Raise the price of silver. The Chinaman will eat and the American farmer will prosper. Somewhere a most unfortunate flaw developed in this seemingly perfect syllogism. The price of silver is up. The Chinese government has protested the rise in the buying power of silver, claiming that it has brought deflation to China. The last reports of the Bureau of Foreign and Domestic Commerce show that American exports to all parts of the world have increased—with one exception—China.

So we say the inflationists have a lot of explaining to do before they get another chance at bat. It is possible that their eloquence, the high hopes of the putative beneficiaries, may surmount the refractory record. The forces that tend toward inflation will be discussed in the next article.

# More Work at Higher Wages Contribution to Recovery

**A**T midnight Saturday, Nov. 17, we will have completed the first year of the Automotive Parts and Equipment Manufacturing Industry Code. It is, therefore, proper that we should take stock of what has occurred in this industry under the provisions of the Code, and I want to discuss with you this afternoon the various aspects of operation under the Code and to show you just how far this industry has gone in support of the President's drive for recovery.

The first thing that I wish to show you is the geographical distribution of this industry.

Chart No. 1 is a small section of the country. The large circle has a radius of 300 miles and has its center in Detroit. Within this circle are located 73.6 per cent of the manufacturers of automotive parts—both original equip-

ment and replacement—and 97.7 per cent of the employees of this industry. The small circle has its center at Sandusky, with a radius of approximately 185 miles. In the area contained in this small circle are located 52.8 per cent of the manufacturers of this industry and 80.7 per cent of the employees. From this study, you can see that this industry is concentrated about the great automobile building industry with its center in Detroit.

Outside of the large circle are located the remaining 26.4 per cent of the employers and the remaining 2.3 per cent of the employees. We have 57 manufacturers operating under the provisions of our Code in the State of California alone.

It will interest you to know that this geographical study was made upon the request of the National Labor Rela-

tions Board. Organized labor has been and is continually requesting the Labor Relations Board to set up a separate board for our industry alone, this proposed board to be similar to and operate in the same manner as the Wolman Board operates for the automobile industry; and for this industry when both labor and management agree to bring their problems before the Wolman Board.

Your Code Authority as yet has not reached a decision as to whether or not to endorse such a plan. There is no question but what such a board, located in Detroit, could operate very effectively for those plants within the larger circle. It also would seem to be an advantageous arrangement inasmuch as the board would soon become familiar with the problems of the industry. On the other hand, there is the question to decide as to how those manufacturers located outside of this concentrated area would handle their cases. Generally speaking, we believe that if a board could be established for this industry that would operate with the same fair dealing and in the same manner as the Automobile Labor Board, it would be advantageous for the industry.

Every four weeks since Nov. 18, 1933, you have been furnishing the Code Authority with a wage and hour report covering a great deal of detailed data with reference to employment within your individual plants.

Chart No. 2 shows the accumulated data for the entire industry with reference to the number of employees and the man-hours worked. In the lower graph the solid black area represents the number of office employees. The area with the horizontal cross-hatching represents the 42-hour employees; in other words, those employees "engaged in the preparation, care, and maintenance of plant, machinery, and facilities of and for production, and in plant protection"; and the area with the angular cross-hatching represents the "employees engaged in the processing of the products of the industry and the labor operations directly incident thereto."

This graph is cumulative; that is, the top line is the total of office, 42-hour, and 40-hour employees for any given period. It shows a minimum of 126,000 employees for the four-week period ending Dec. 16, 1933, and a maximum of 182,000 employees for the four-week period ending April 7, 1934.

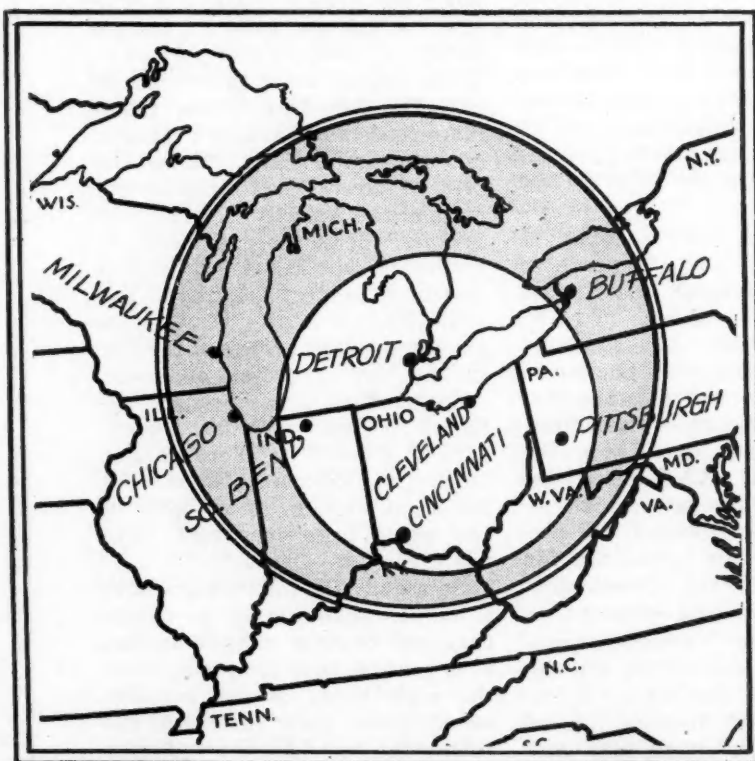


Chart No. 1—The radius of the larger circle is 300 miles with its center in Detroit. 73.6 per cent of the manufacturers in the parts industry and 97.7 per cent of the employees are located inside of this circle. The center of the smaller circle is at Sandusky, Ohio, and its radius is about 185 miles. Within the area it encloses are 52.8 per cent of the manufacturers and 80.7 per cent of the employees

# Parts Makers' Under APEM Code

by C. O. Skinner

Secretary, Code Authority Committee,  
Automotive Parts and Equipment  
Manufacturers, Inc.\*

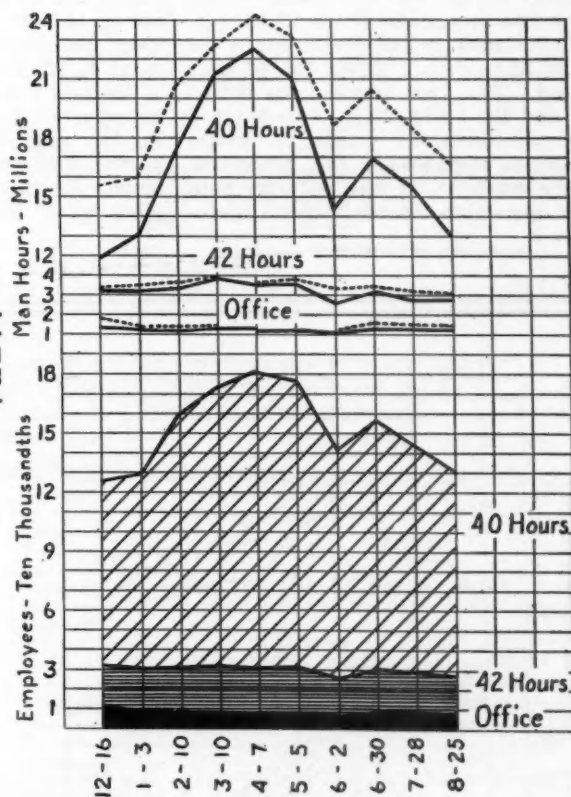
I call your particular attention to the saw tooth in the curve for the four-week period ending June 30. Your Code Authority used every reasonable method of persuasion to obtain wage and hour reports from the members of this industry. There were certain members of the industry who consistently refused to submit these reports and, in order to obtain them, it became necessary to file complaints against these recalcitrant members of the industry with the various State Compliance Directors of the National Recovery Administration. The saw tooth in this curve represents an increase of 100 reports resulting from the filing of such complaints.

The three curves at the top of this chart represent the man-hours worked by the different classifications of labor under the Code; that is, the 40-hour production employees, the 42-hour specialized employees, and the office employees. The solid black line in each case represents the actual man-hours worked, the scale at the left being in millions of man-hours. The dotted line accompanying each of the solid black lines represents the man-hours that could have been worked providing each employee reported for a given period had worked the total number of hours allowed for his classification under the provisions of the Code.

In the 40-hour curve at the top it is interesting to note, at the right hand side, that as production slowed down, this industry did not lay off men in proportion to this slow-up, but, rather, spread the work and cut down the number of hours per man per week. I also call your attention to the remarkably fine record of employment in the 42-hour classification. This curve shows that we have employed our tool makers and similar classifications practically

\* An address delivered before the annual convention of the National Standard Parts Association, Cleveland, Nov. 16.

Chart No. 2—  
Showing number  
of employees and  
man-hours worked  
for ten four-  
week periods



to the limit of the hours provided under the Code, and it further gives an indication of the reason why it has been difficult for labor organizations to interest these employees in strikes, as they have been able to do with the employees of the independent tool shops, particularly in the Detroit area.

As you know, this industry is divided into two distinct groups; that is, (1) those manufacturers whose business is devoted mainly to the supplying of original equipment parts to the car manufacturer, and (2) those manufacturers whose business is either entirely or mainly devoted to the supplying of replacement parts. Therefore, when we started to collect the data on employment for the industry, we selected two groups of companies; the first group representing manufacturers the vast majority of whose business is devoted to the supplying of original equipment parts, and the second group those

whose business is 100 per cent replacement parts. By taking these same companies in both groups month after month, we obtain an accurate picture of these two divisions of this industry.

Chart No. 3 represents the reports of the original equipment manufacturers. This chart is set up on exactly the same basis as the charts which you have just seen for the entire industry; that is, the lower graph representing employment, the upper graph representing man-hours. On the man-hour curve for the 40-hour employees, please note that in the second and third 4-week period the 40-hour employees were employed more hours than 40 per week and that when these manufacturers realized this condition, additional employees were added so that at no time was the maximum 40-hour limit reached.

It is also interesting to note how far these manufacturers went in

spreading the work as the number of man-hours required per week decreased with the slowing up of business. We also call your attention to the 42-hour man-hour curves, which show how the averaging provisions of our Code work out. In the first three periods, these employees worked more than the 42-hour average provided by the Code. After March 10 the man-hours worked became less than the possible man-hours and, consequently, the average of 42 hours per week as required by the Code was successfully met. It is also interesting to note that in the case of office employees it was impossible to chart the difference between the hours actually worked and the possible hours under the provisions of the Code.

Please note in the lower curve the dotted line running across the 40 hour section. The area between the dotted line and the horizontally cross-hatched area represents the number of female employees engaged in the processing of the products of the industry and labor operations directly incident there-

to. This amounted to 20.3 per cent of the total 40 hour employees at the start of the year and increased steadily, reaching a peak of 25.1 per cent for the four week period ending Aug. 21. At the top of the chart we have shown the production curve of the automobile manufacturers for this year. This represents the total number of passenger cars and trucks produced exclusive of Ford. This chart shows how closely the labor operations of those parts manufacturers engaged in the original equipment business are allied with the production of the car manufacturer.

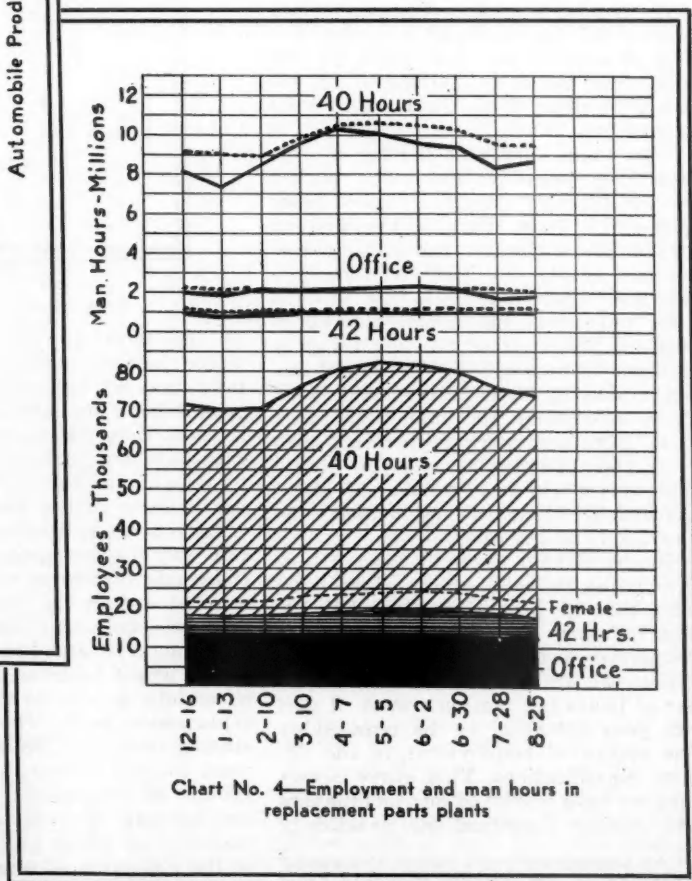
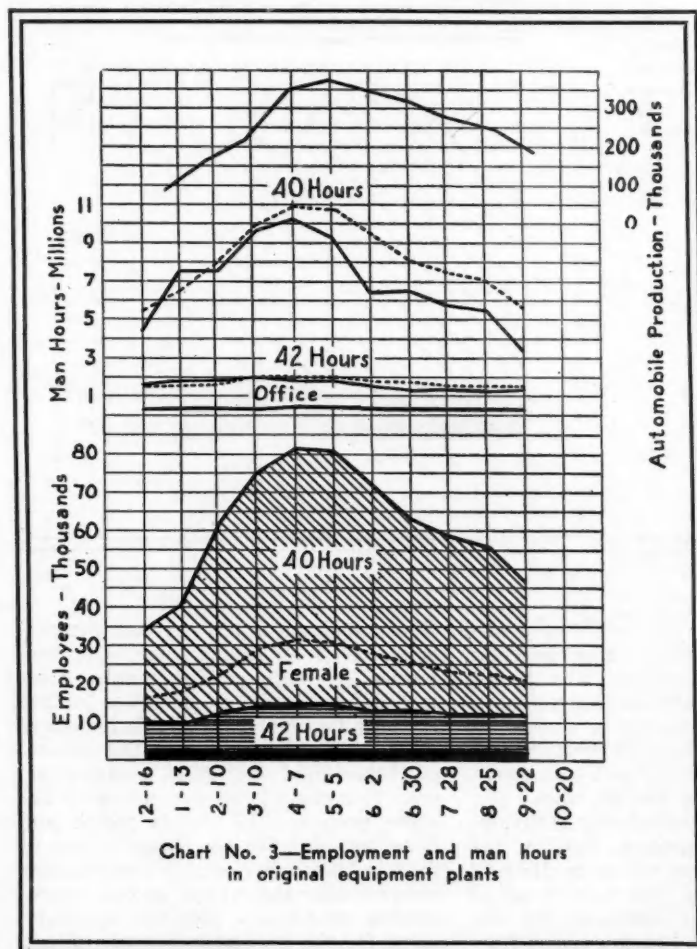
Before turning to the next chart, please fix in your minds the extreme curve of both man-hours for the 40 hour classification and total employment as shown on this chart.

We now turn to the chart for those manufacturers engaged 100 per cent in the manufacture of replacement parts. For comparative purposes, the figures for this chart have been multiplied by a factor so that the peak

reached both on the curve showing the number of employees and on the curves showing the man-hours is exactly the same. Please note the large number of office employees employed by these manufacturers. Also the much smaller number of tool makers, die setters, etc., in the 42 hour classification. Also note the dotted line in the 40 hour section of the employee curve which shows female employees. The percentage of female employees amounts to approximately six and is constant throughout the year. As in the case of the original equipment manufacturers, the replacement parts manufacturer has done an exceedingly fine job of employing his 42 hour employees and as production fell off, employees were not laid off at the same rate but the work was spread.

We call your particular attention to the comparatively smooth production curve of the replacement parts manufacturer. These curves, as they are being shown here today, simply go to show that the replacement parts business is much more stable than the original equipment business is or can be until such a time as the car manufacturer is able to smooth out his production curve.

Let us now look over just what has happened to wages in this industry as shown on Chart No. 5. The solid curve represents the average rate per hour for all employees, exclusive of office employees, for the entire industry. The horizontal lines represent the average rate per hour for the years from 1929



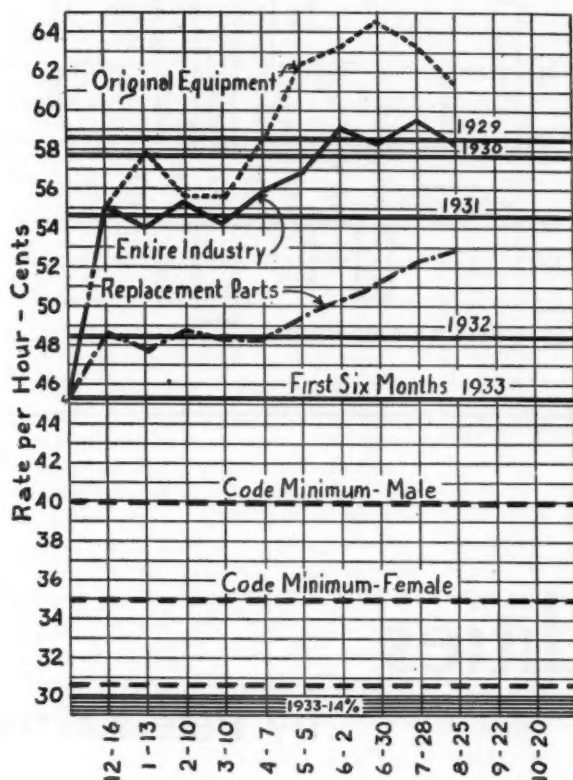


Chart No. 5—Wage rates in the parts industry as a whole and in original equipment and replacement parts plants

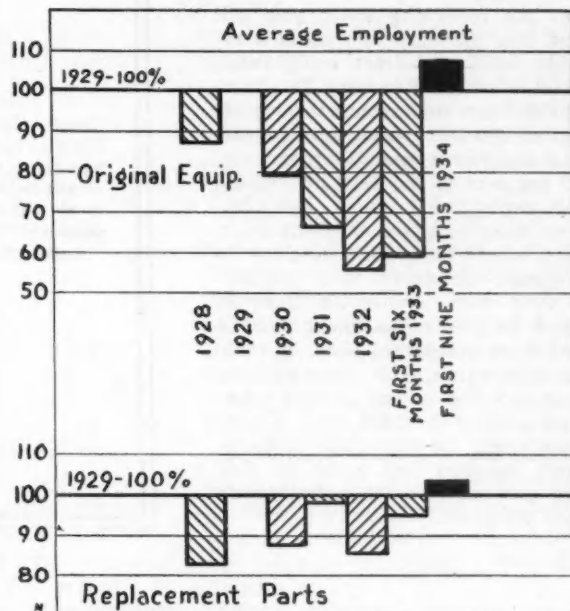


Chart No. 6—Comparative employment record of original equipment and replacement parts manufacturers

to date, so that we are able to compare the average rates of those various years with the average rate for the past year. You will note that the entire industry has reached an average wage rate higher than the average rate for the peak year of 1929. The dotted curve at the top represents the average wage rate for the original equipment manufacturers for whom the special chart is kept. The dot-dash curve represents the average rate for the special group of replacement parts manufacturers for whom we keep a special record. The relatively lower rate paid by the replacement parts manufacturers can be explained by the fact that the original equipment manufacturers are usually located in the metropolitan areas and consequently are forced to pay the highest rates for the entire industry.

You have all received during the past few weeks the various Code Authority Bulletins showing the wage study by classifications of labor. You will remember that we divided each state into three groups; that is, the metropolitan area, the cities outside of the metropolitan area with a greater population than 25,000, and the cities

of less than 25,000 population. In studying these reports there was a very distinct break in the wage rates at approximately the 25,000 population point.

On this Chart No. 5 we call your particular attention to the fact that in the first six months of 1933, 14 per cent of the employees of this industry received less than 30 cents per hour. We also wish to call your particular attention to the remarkable increase in wage rates shown by this industry as compared with the average rate of 45.3 cents for the first six months of 1933.

With the information accumulated on the charts which we have already shown you, we are able to make a comparison of employment for both the original equipment group and the replacement group over the years from 1928 to date. Chart No. 6 shows this comparison on a percentage basis, using the average employment for the year 1929 as 100 per cent. Please note that at no time from 1929 to date have we reached the employment of that year. The lowest employment as compared with 1929 shows 56 per cent for

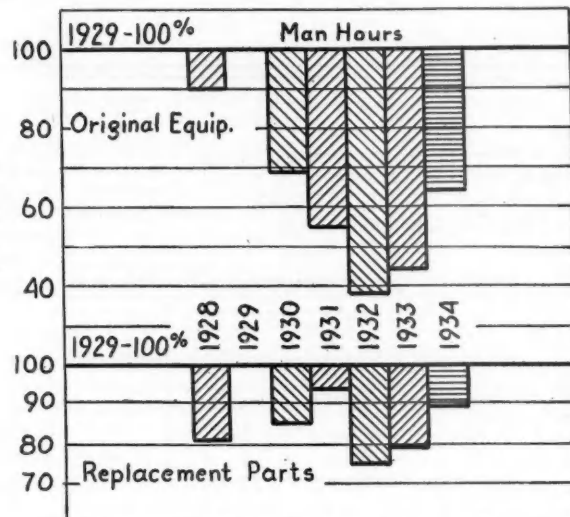
the original equipment group in the year 1932 and 85½ per cent for the replacement group in the same year. Here again, we show the relative uniformity of the replacement business as compared with the original equipment business. For the first nine months of this year the average number of employees of the replacement group was 4 per cent higher than the average number of employees for the year 1929 and for the original equipment group the average number of employees for the first nine months was 8 per cent higher than for the year 1929.

There have been prepared in the past many indices and charts of the production in the Automotive Parts Industry. These have always been open to question and we are submitting here today what we believe to be the best production chart that can possibly be prepared for this industry. Chart No. 7 represents the man-hours of both the original equipment and replacement groups, using 1929 as 100 per cent. The figures for the years preceding this year are complete. For the year 1934, as represented by the bars with the horizontal cross-hatching, we have given you our estimate of the total man-hours based upon the man-hours reported through Sept. 22. Production for the original equipment manufacturers reached its low in the year 1932, amounting in that year to only 38 per cent of the production for 1929. The low for the replacement group was

also reached in that year and amounted to 74 per cent of the production for the year 1929.

From the foregoing data, you will see that this industry has made a remarkable, and we believe exceptional, contribution to the Recovery Program. With production amounting to only 64 per cent of the 1929 production for the original equipment manufacturer and only 89 per cent of the 1929 production for the replacement parts manufacturer, we have increased employment to the point where today this industry in the original equipment field employs 8 per cent more employees than in 1929 and in the replacement field 4 per cent more employees than in 1929. At the same time, the average rate per hour for the entire industry has been increased to the 1929 level. Therefore, gentlemen, through your cooperation your industry has given its full measure and more to the President's Recovery Program.

Chart No. 7—  
Comparative  
man-hour record  
of original equip-  
ment and re-  
placement parts  
manufacturers



# Automotive Oddities

by Pete Keenan



MRS LEE FRANKFORT, KY. ALWAYS DOES THE HORN TOOTING WHEN HER HUSBAND DRIVES. (SPECIAL INSTALLED HORN)

IN 1840 ABRAHAM LINCOLN BUILT A MODEL OF A WAGON WITH THE STUB AXLES SWIVLED AT THE WHEEL AS NOW USED ON AUTOMOBILES. Now in the Lincoln Memorial Museum, Washington.



THE FLEMISH WORD FOR MOTOR CAR IS  
**"SNELPAARDELOOSZONDERSPOORWEGPETROLRITJTUIG"**

# JUST AMONG OURSELVES

## Understanding Makes For Cooperation

THE preservation of amicable relations hinges as much perhaps on labor's having a real appreciation of the problems of management as on management's having a sympathetic understanding of the attitudes of its workers. The letter which President Alfred P. Sloan wrote recently to General Motors factory employees (A. I., Nov. 3, 540), recognizes this fact, and unquestionably industry needs more of the sort of employee-educational effort this communication typifies.

Since at the outset, at least, such efforts will almost certainly be viewed with some suspicion, it goes almost without saying that their sincerity must be beyond question, or the results will be worse than no efforts in that direction. The intent should be frankly and honestly to present the basic elements on which the success of the business and the continuity of employment rest. Moreover such presentations are likely to prove more effective if they consist not of economic abstractions, but are tied very definitely and clearly with the business by whom the workers are employed.

\* \* \*

## Dealers Ponder Clean-Up Move

FROM the dealers' standpoint there is probably no clause in their code that has worked less satisfactorily than the clean-up provision under which with the consent of the factory concerned, State Advisory Committees are empowered to authorize the sale of obsolete, or soon-to-be-obsolete new cars at less than list prices.

Some dealers are coming to the conclusion that the best move they could make would be to have this section of the code deleted. They reason that, if this were done, in order to get field stocks liquidated preparatory to the introduction of new models, manufacturers would have to reduce list prices. In that case, dealers having price protection provisions in their contracts would have to be rebated on cars in stock. Moreover, any additional cars of the obsoleted series purchased, would be at the new lower prices less the regular discount. Of course, factories might counter this move by striking price protection provisions from their contracts.

\* \* \*

## The Most Radical Car in Paris Show

UNDOUBTEDLY the most radical design at the recent Paris Salon was the lozenge-shaped vehicle by Voisin, which has steering wheels in the longitudinal axis at front and rear and two driving wheels at opposite sides somewhere in between. The car, which was heralded as "the vehicle of the future," is equipped with a radial engine back of the rear seat which drives directly to the single axle. The driving wheels, evidently, are independently sprung.

Better streamlining possibilities seem to be the main object of the new design. As there is no propeller shaft beneath the body the passengers can be seated close to the ground, and the vehicle should have a high degree of stability.

Because of the central location of the steering wheels at front and rear, all tendency to

shimmy should be eliminated, and the skidding proclivities also should be greatly reduced. On the other hand, it is to be expected that many new problems involving steering, traction and suspension will arise in the development of this type of car.

The new model is said to be a child of the depression. "Misfortune has its uses," quotes the manufacturer; "in the unprecedented crisis the automobile industry has learned the need for efficiency." It may be agreed that streamlining and the resultant reduction in wind resistance tend toward efficiency, but at the same time it is to be doubted whether the depression problems of any great number of people are capable of being solved by 150-hp. cars.

\* \* \*

## Lower Prices Spread Purchasing Power

THAT lower prices spread purchasing power, is a principle that received scant attention during the period when all the emphasis was on building up consumption by raising wages. But this principle upon which the automotive industry has always operated—and without gouging labor to do it—now appears to be getting belated recognition. One straw that shows the way the wind is blowing is the recent report that the new National Industrial Recovery Board had turned "thumbs down" on production control devices in codes.

\* \* \*

## Fishing Expeditions

A THOROUGH public investigation of the automotive industry revealing executives' salaries, actual earnings, reserves and all items of expense, was urged on President Roosevelt last week by the American Federation of Labor. There is nothing to indicate that the President will do anything but ignore this suggestion, but, if he were to accede to it, it has been suggested to us that it would not be out of place for him to order a similar fishing expedition into the financial affairs of labor organizations.—The Editors.

# "Exanol" Additions Markedly Be Viscosity Characteristics of N

A NEW type of engine lubricant known as Exanol oil was described in a paper presented at the annual meeting of the American Petroleum Institute this week by M. Otto, F. L. Miller, A. J. Blackwood, and G. H. B. Davis of the Standard Oil Development Co. These lubricants are

blends of ordinary lubricating oils with small proportions of liquid hydrocarbons produced from the light ends of refinery gasoline by polymerization. They are said to show lower consumption for comparable starting ease than normal engine oils, as well as lower carbon- and sludge-forming tendencies,

and to give an excellent piston seal and lubrication; they are now in commercial production.

The change in the viscosity of an oil with temperature is an important factor determining its value as an engine lubricant. The susceptibility of an oil to change in viscosity with change in temperature is expressed (inversely) by its viscosity index (V.I.). For the benefit of readers not familiar with the subject it may be explained that in determining the viscosity index of an oil, use is made of two reference oils which at 210 deg. F. have the same viscosity as the sample under test. One of these reference oils is of naphthenic or Coastal origin, whose viscosity changes rapidly with temperature, and its viscosity index is set down as zero; the other is an oil of paraffinic or Pennsylvania origin, whose viscosity changes more slowly with temperature, and its viscosity index is made equal to 100. Practically all commercial oils have intermediate viscosity indices.

In determining the viscosity index for any given oil the Saybolt viscosities of the two reference oils at 100 deg. F. (if they are not already known) and of the oil under test are determined in the usual way. Calling the viscosity of the naphthenic oil at 100 deg. A, that of the paraffinic oil, B, and that of the oil under test, X, the viscosity index of this latter oil is given by the equation.

$$V.I. = (A - X) / (A - B).$$

It was pointed out in the paper that the present method of meeting the situation arising from changes in lubricating requirements with seasonal changes is to recommend different grades of oil according to the season. While this practice has worked out fairly well so far as the engine manufacturer and the oil marketer are concerned, it is highly unsatisfactory from the standpoint of the consumer. One reason for this is that the change in lubrication requirements are dependent upon atmospheric temperature, and sometimes there are changes of as high as 50 deg. in atmospheric temperature from day to day, or even during a single day.

From the users' standpoint the ideal would be an oil that could be satisfactorily used the year round, but it is shown in the paper that this would call for a viscosity index of from 125 to

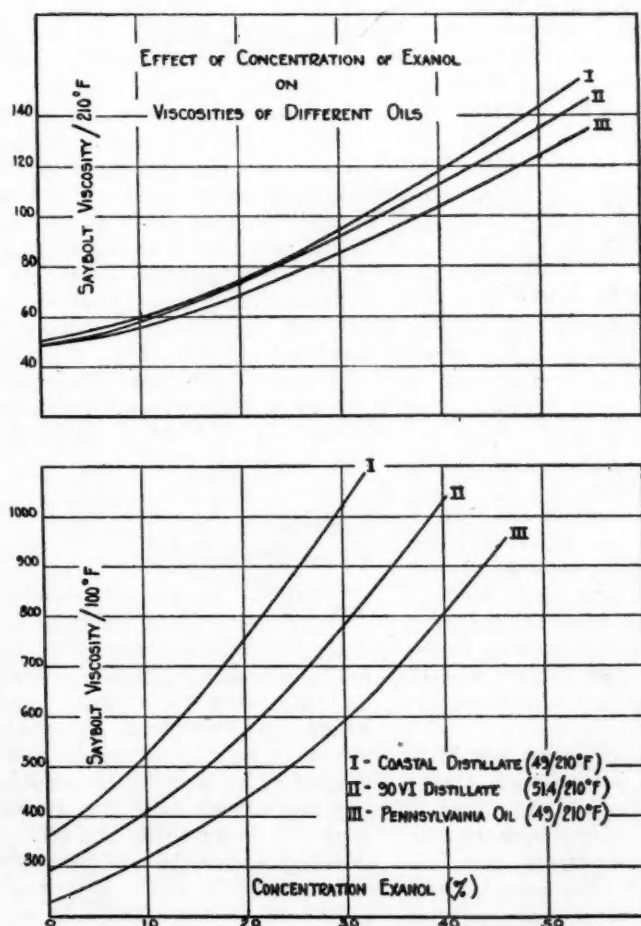


Fig. 1—Effect of concentration of Exanol on the viscosity of different oils at 100 deg. and 210 deg. F.

# Better Temperature— New Engine Oils

139, depending on the type and condition of the engine in which it were to be used. This is higher than the viscosity index of any oil now marketed.

Following is an abstract of that part of the paper which relates to the new type of lubricant.

Intensive efforts have been made by the petroleum industry to improve the "paraffinic" of mineral oils in order to obtain improved viscosity indices and the accompanying benefits. Included among the different methods which have attained certain degrees of success are:

- (1) Hydrogenation
- (2) Solvent Extraction
- (3) Aluminum Chloride treatment
- (4) Fuming sulphuric acid

Hydrogenation brings about improvement in the paraffinic nature of an oil probably by rupturing some of the ring compounds to form paraffin chain-like compounds and causing various molecular rearrangements. Solvent extraction by means of a varied line of solvents, including phenol, nitrobenzene, B-B dichloroethyl ether, cresylic acid

and furfural, accomplishes this by dissolving out the least paraffinic constituents and thereby concentrating the most paraffinic ones. Aluminum chloride effects a similar improvement by a combination of chemical rearrangement of the molecules and the polymerization of the less desirable portions of the oil in the form of sludges. The action of fuming sulfuric acid is probably in many ways similar to that of aluminum

Now in commercial production, new lubricants have small percentages of polymers, called "Exanols" produced from light ends of refinery gasoline.

chloride, except that it also includes a certain solvent-extraction effect.

In spite of their relative merits, however, all these processes are limited in the extent to which they can improve the viscosity index of an oil, largely because the concentration of paraffin wax builds up with the increasing severity of treatment necessary to reach the higher viscosity indices, and when dewaxed to a reasonable pour point, the oil is rarely over 115 viscosity index, especially in the higher viscosity oils.

Studies of synthetic compounds have also indicated that it is possible to produce oils of high paraffinic and viscosity index, although such products are not available commercially. The work by Sullivan, Voorhees, Neeley and Shankland especially deserves consideration. This work demonstrated that high-viscosity-index, isoparaffin-type oils of low pour points could be produced by the condensation of unsaturated, cracked paraffin wax with aluminum chloride as a catalyst. When such oils were made with viscosity indices of around 110 to 115, however, it was found that the solidification temperatures or pour points rapidly increased.

Similarly, it has been found that synthetic oils of high viscosity index can be made by condensing paraffins with aromatic nuclei, such as benzene and naphthalene. Extremely viscous oils ranging up to around 120 viscosity index could be made by this process, but again trouble was encountered in obtaining products having satisfactory pour points. It was possible to obtain even higher viscosity-index oils by blending these heavy oils with relative-

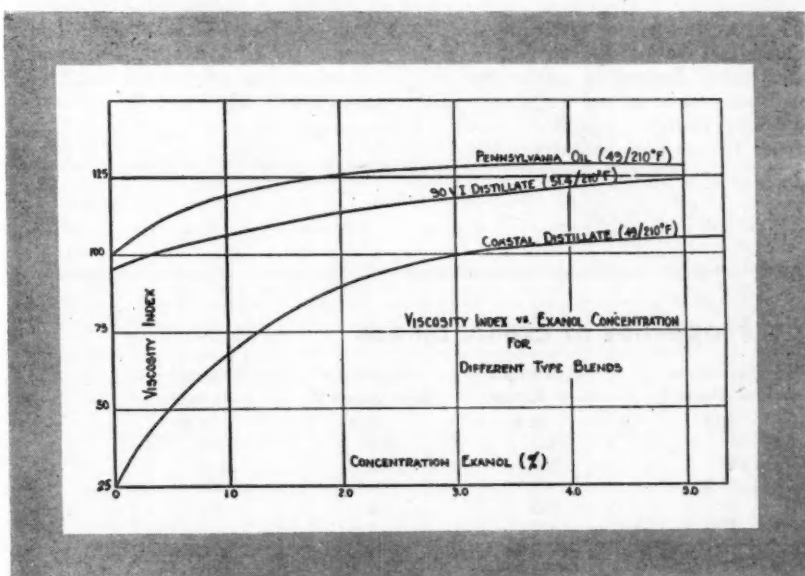


Fig. 2—Effect of the concentration of Exanol on the viscosity indices of different oils

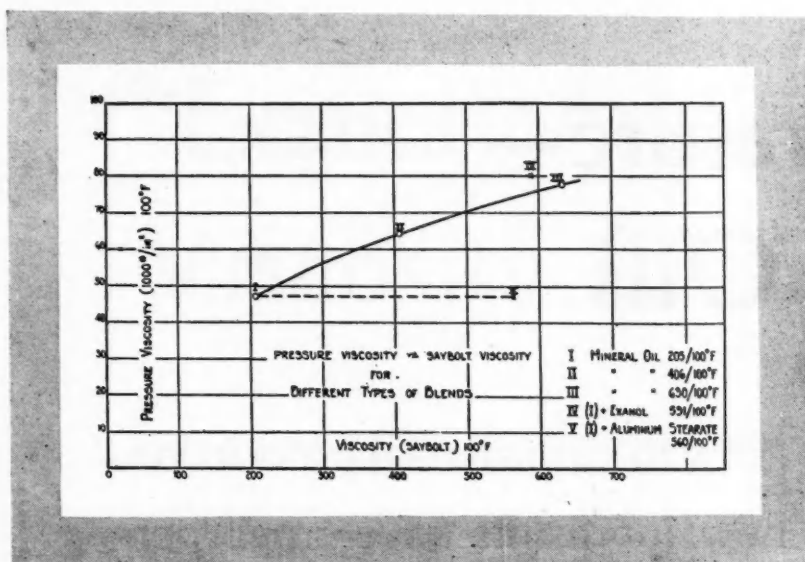


Fig. 3—Effect of pressure on the viscosities of oils.

ly low-viscosity neutrals. It is rather surprising that certain of the blends possess viscosity indices higher than either of the two components, and in several cases blends having as high as 125 viscosity index were obtained. Because of costs and other considerations, however, these oils have not offered promise of developing into commercial motor lubricants.

There are also other ways of improving the viscosity index of mineral oils which deserve mention but which are not very successful. One method involves the use of small quantities of rubber—which may logically be considered an extremely long aliphatic hydrocarbon—as a mineral-oil-blending or thickening agent. Although rubber may improve the viscosity index of an oil, it tends to impart other undesirable characteristics.

A second method consists in blending a mineral oil base stock with fatty oils, most of which in themselves possess high viscosity indices. These blends, however, are characterized by instability, and they often cause separation of sludge in the engine, sticking of piston rings, and piston scoring—defects

which the fatty oils themselves display if employed over an extended period or under severe service.

The net result of the studies to date has been to strengthen the conviction that the highest possible degree of paraffinicity is needed to obtain high viscosity indices. To obtain this, it would appear that the greatest promise lies in the development of a paraffinic type of material of unusual chain length. The work of Sullivan, Voorhees, Neeley, and Shankland demonstrated that the viscosity indices of their synthetic oils improved with the length of the unsaturated paraffin used in the polymerization step. As pointed out previously, however, the pour (or solidification) points of their products increased rapidly as the chain length was increased. More recently it has been pointed out that materials having a long-paraffinic-chain structure are characterized by low viscosity-temperature coefficients. Obviously, therefore, the product most desired is some sort of isoparaffinic material of relatively high molecular weight which is not handicapped by a high solidification point.

## Exanol Oils

Extensive research recently has led to the development and production of such high-molecular-weight materials by polymerization\* of the light ends of refinery gasoline. These polymers are liquids soluble in mineral oils and possess the remarkable property of increasing the viscosity indices of such oils even when used in low concentrations. With the commercial development of such products, oils having viscosity indices of around 120 have become an actuality. As an example, the addition of 1.3 per cent of a given sample of the polymer to an oil of 201 seconds Saybolt at 100 deg. F., 46.4 seconds at 210 deg. F., and 93 V. I., resulted in a blend having 100 deg. F. and 210 deg. viscosities of 307 and 56.6 seconds respectively, and 120 V.I.

Such polymerization products of the light ends of refinery gasoline, to which the name Exanol has been given, are clear and colorless substances which can be made with molecular weights up to many thousands, depending upon control of manufacture. In consistency they may range from a light fluid oil up to highly viscous polymers which barely flow. They are pure hydrocarbons, essentially saturated in character, with twice as many hydrogen as carbon atoms to the molecule, as would be expected of high-molecular-weight, paraffinic materials.

The effect of Exanol upon the viscosities and viscosity indices of several types of mineral oils is illustrated by Figs. 1 and 2 which represent the data obtained with blends of a typical grade of Exanol in three different representative types of oils, viz.,

- (1) a low V.I. Coastal oil of 49 seconds at 210 deg. F.
- (2) a 90 V.I. paraffin distillate of 51.4 seconds at 210 deg. F., and
- (3) a Pennsylvania type oil of 49 seconds at 210 deg. F.

It will be noted that as the concentration of Exanol is increased, the viscosity is increased and at the same time the viscosity index is rapidly improved. Fig. 1, comprising curves for both the 100 deg. F. and 210 deg. F. viscosity

\* Polymerization is a chemical process whereby two or more molecules of a given substance are combined into one, forming a new substance.—Editor.

Table I. Physical Properties of Exanol Blends

Property	Paraffinic Base Stock A	Base Stock A + Exanol	Paraffinic Base Stock B	Base Stock B + Exanol	Paraffinic Base Stock C	Base Stock C + Exanol
Gravity .....	30.7	30.7	30.2	29.6	28.6	28.5
Flash (deg. F.) ..	420	420	425	425	445	440
Vis/100 deg. F. ..	195	343	254	598	488	822
Vis/210 deg. F. ..	45.5	60	49.2	77.8	64.6	92
V.I. ....	98	123	92	119	100	117
Color .....	22½	20½	17½	17	1½	1½
Carbon .....	0.008	0.014	0.018	0.021	0.722	0.794
Pour (deg. F.)....	10	10	10	10	30	30

Table 11  
Properties of Exanol Oils

Property	Winter Grade	Summer Grade
Gravity	29.7	28.6
Flash	415	435
Fire	465	490
Vis/100	351	986
Vis/210	60	102
V.I.	121	117
Color	9/4	3/2
Carbon	0.05	0.42
Four	-20	-5

data, clearly demonstrates the viscosity changes with concentration of Exanol. Similarly, the curves in Fig. 2 illustrate the effect of the concentration of Exanol on the V.I. of the different oils.

Although effecting such unusual changes in the viscosities and viscosity indices of the different oils, Exanol does not appreciably alter the other commonly measured physical and chemical properties of an oil. The gravity, flash, fire, pour, color, Conradson carbon, acidity, saponification, and demulsibility characteristics are all essentially those of the base stock itself. Test results from several different base oils and their blends with Exanol are given in Table I to illustrate this, as well as to

show the characteristics of such blends. It will be observed from the data presented that these oils possess two outstanding characteristics, namely, a high viscosity index and a low Conradson carbon value for a given viscosity grade. Their flash points and distillation curves naturally are lower than for the equivalent grade mineral oils, but by choice of base stocks of proper viscosity, viscosity index, and flash point characteristics, entirely satisfactory blends can be made.

These blends should not be confused with soap-thickened oils, nor with mineral oil blends containing rubber; they possess essentially the same properties as the usual mineral oils, including maintenance of viscosity under pressure, or increased shearing stresses, as contrasted to the soap-containing mixtures, which have viscosities at high rates of shear approaching those of the base stock itself.

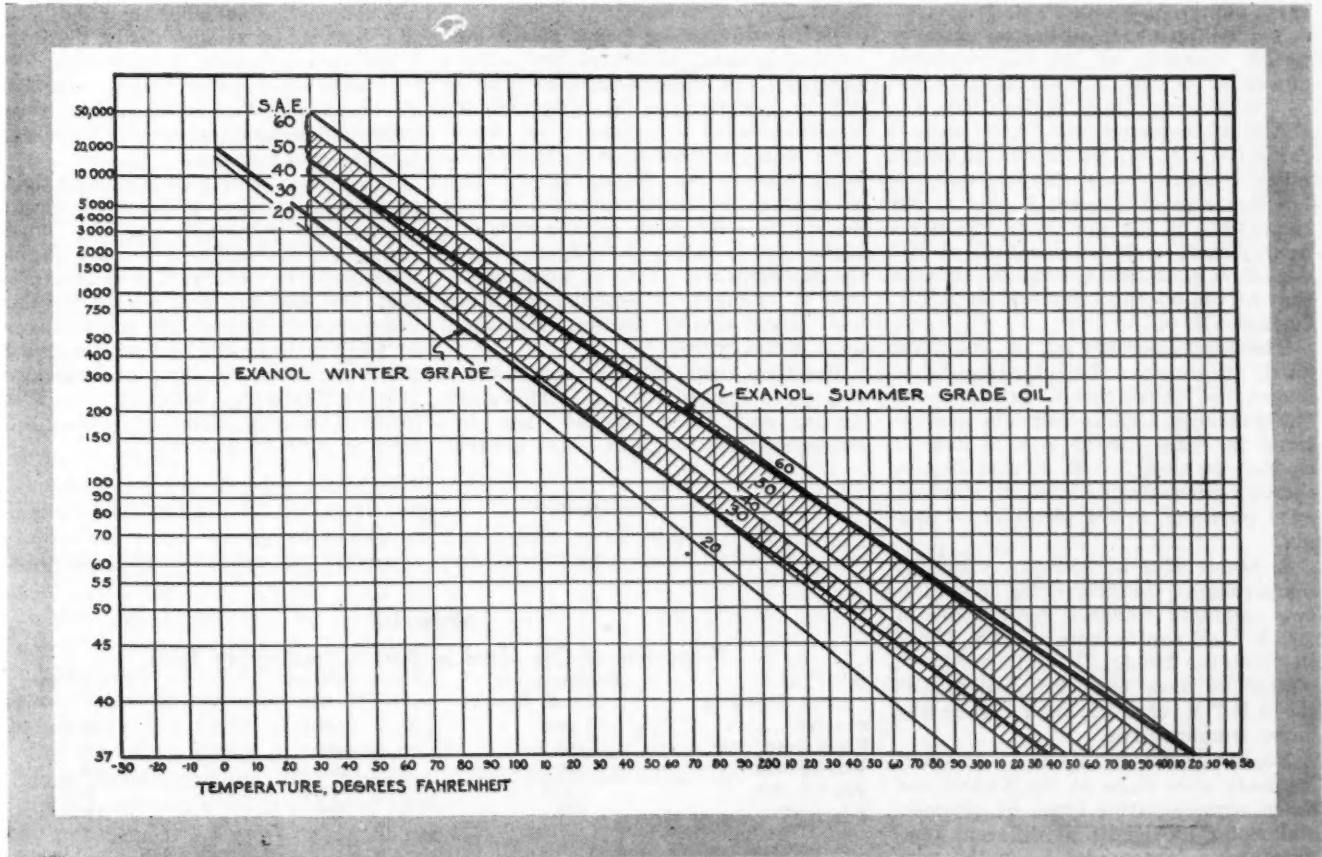
This has been experimentally demonstrated by viscosity studies at high pressures. In one series, measurements were made on several mineral oils, an Exanol blend, and an aluminum-stearate-thickened oil, using a pressure bomb and forcing the oils through a 0.014-in. orifice under a hydrogen pressure of 1,000 lb./sq. in. The results of these experiments are illustrated by

Fig. 3. Oils I, II, and III are mineral oils having viscosities at 100 deg. F. of 205, 406, and 630 seconds, respectively. These gave pressure viscosities at 100 deg. F. of 47, 64, and 78 seconds, respectively, and fall on the curve. Oil V is an Exanol blend made from oil I and has a 100 deg. F. viscosity of 591 seconds, and a pressure viscosity of 80 seconds, which is slightly higher than that for a mineral oil of equivalent viscosity but which is probably within the limits of experimental error of carrying out such measurements. Oil V is an aluminum-stearate-thickened oil of 560 seconds viscosity at 100 deg. F., also made from Oil I as a base, but which, in spite of this high viscosity, gave a pressure viscosity of only 47 seconds, the same as that for the base oil itself.

Performance Tests on Exanol Oils

Because of the apparently radical departure from established lubrication practices which might appear to be involved in the use of such oils, it is only natural that a large number of experiments and motor tests were carried out to determine their operating characteristics and the advantages to be gained therefrom. These included tests on ease of starting, consumption, pumping, and engine sludging. Among the many

Fig. 4—A.S.T.M. viscosity-temperature chart for S.A.E. 30, 40, 50, and 60, 100 V.I. and Exanol winter- and summer-grade oils



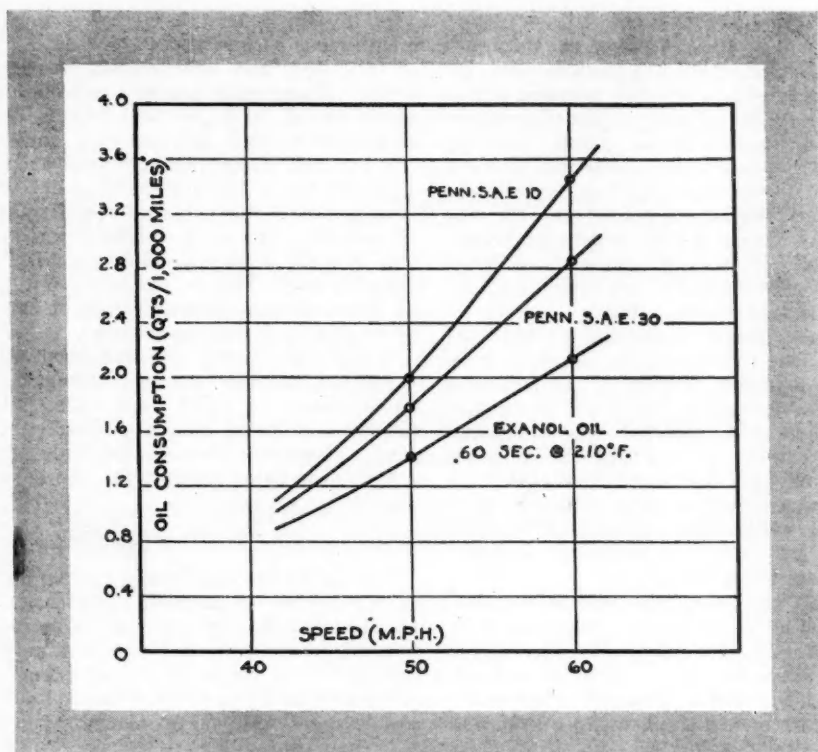


Fig. 5—Rates of oil consumption with different engine oils in Buick 1932 car

oils tested, two grades of Exanol oils in particular, a winter and a summer oil, of 120 V.I., illustrate well the behavior of this class of oils. The properties of these oils are given in Table II.

The winter-grade oil has an extremely low viscosity at low temperatures, 20,000 at 0 deg. F., as compared to 50,000 seconds for a typical 100 V.I., S.A.E. 30 motor oil, and 14,000 seconds for a 100 V.I., S.A.E. 10 oil. It should allow relatively easy starting down to temperatures of 10 deg. F., but at the same time at the approximately average cylinder wall temperature of 350 deg. F. it possesses a viscosity equal to that of the average commercial S.A.E. 30, 100 V.I. oil.

The summer-grade oil, on the other hand, possesses sufficient viscosity to insure low consumption, yet at lower temperatures, such as might be encountered in early spring or late fall, is as fluid as most S.A.E. 30 and 40 oils, thereby guaranteeing ease of starting, good pumping, and a plentiful oil supply.

A better idea of how the viscosity-temperature characteristics of these two products compare with those of 100 V.I. oil can be gained from Fig. 4 in which the 210 deg. F. and 100 deg. F. viscosities have been extrapolated on the A.S.T.M. chart to both higher and lower temperatures.

Numerous breakaway and cold-starting tests were made on the Exanol and other representative types of commercial motor lubricants at different temperatures. Measurements on the win-

ter grade oils at -15 deg. F. and 0 deg. F. and on the summer oils at 25 deg. F. were made with a Ford V-8 engine mounted on a dynamometer in a well-controlled cold room.

Curves of starting torque at 40 r.p.m. vs. extrapolated viscosity, drawn from the results of these tests, show that as far as cold starting is concerned, the Exanol-blended oils behave as would have been predicted from their extrapolated viscosities. These curves also show that the torque required to turn an engine over at a certain speed is higher for a given viscosity the lower the temperature. This is undoubtedly due to changes in engine clearances and other similar factors dependent upon temperature.

Pumping tests at low temperatures also were carried out in a laboratory set-up, and these showed that the Exanol-blended oils, like other mineral

oils, flow or pump in proportion to their extrapolated viscosities at such temperatures provided, of course, that effects such as channeling, etc., due to solidification of wax are eliminated. Like most mineral lubricants, oils containing Exanol are susceptible to the action of Parafflow, and when treated with this product, readily pump without channeling at low temperatures.

A number of consumption tests were run on Exanol blends. These included tests on dynamometer set-ups, using Ford (Model A), Chrysler, Chevrolet, and Mack engines, and a series of tests each with a Buick, Chevrolet 6, Ford Model A and Ford V-8 in a controlled-temperature room.

In the Buick tests, consumptions were measured at two different speeds, 50 and 60 m.p.h. Three oils were employed for these tests, namely, a well-known commercial premium-priced Pennsylvania S.A.E. 30 oil, a similar Pennsylvania S.A.E. 10 oil, and an Exanol oil of 60 seconds viscosity at 210 deg. F. and 125 V.I. The properties of these oils are given in Table III. Consumption data in terms of qts./1000 miles are plotted in Fig. 5. It will be observed that in spite of the lower viscosity at 210 deg. F. and lower flash point, the Exanol oil showed lower oil consumption at these speeds than did the S.A.E. 30 Pennsylvania oil.

In all tests the Exanol oils showed low consumptions, as compared to other oils of the same grade. Such results are probably explainable on the basis that the high V.I. oils possess higher viscosities at piston and cylinder-wall temperatures, and are therefore less subject to pumping past the rings into the combustion chamber than the lower V.I. lubricants. Undoubtedly, there are other factors besides high-temperature viscosity which enter into the problem of oil consumption, but in the cases just cited it would appear to have been the governing factor.

Laboratory engine tests such as those previously mentioned have all shown Exanol oils to provide excellent lubrication and to result in a clean engine condition. In general it may be stated that the carbon- and sludge-forming properties of Exanol oils are the same as for the base stocks, and that with the proper base oil, superior lubricants may be obtained. Recently completed tests on the two grades of Exanol oils tend to substantiate this.

Table III  
Properties of Oils Used in Buick Consumption Tests

Property	Pennsylvania S.A.E. 10	Exanol Oil	Pennsylvania S.A.E. 30
Gravity .....	29.6	30.5	28.4
Flash (deg. F.) .....	410	415	435
Vis/100 deg. F. ....	198	337	478
Vis/210 deg. F. ....	46.6	60.3	63
V.I. ....	100	127	100

# Uniontown Test Results Point Way for Future Fuel Research

A REPORT of the 1934 detonation road tests at Uniontown, Pa., was made at the meeting of the American Petroleum Institute by C. B. Veal, secretary of the C.F.R. Committee. A general account of the Uniontown tests appeared in *Automotive Industries* Sept. 8. It will be recalled that the tests served two purposes, viz., to determine the correlation of the C.F.R. motor method of anti-knock tests and to obtain a basis for further fuel research.

The degree of correlation between laboratory and road tests in the fuels used at Uniontown is shown by the graph reproduced herewith. The 45-deg. line in the diagram represents perfect correlation. The points denote the average road ratings for each test fuel, and the height of the vertical rectangles represents the average spread of the road ratings. These spreads reflect the difficulty involved in any attempt to develop a laboratory method which will give better correlation. The graph shows that the correlation between the present motor method and the road-test data is within the limits of the experimental error of the technique employed. It is felt, however, that both the motor method and the road method are subject to improvement, and work along these lines is already in progress.

Another graph accompanying Mr. Veal's report showed the average octane-number requirements of the Uniontown test cars. These varied from 76 octane number, or six above the base of 70, to 54 octane, or 16 below the base. This chart was based on trace knock intensity obtained with mixtures of reference fuel A-3 and C-8, which, it is asserted, should always be used for direct determinations of the octane-number requirements of cars, rather than more sensitive fuels. Weather conditions are another factor which was found to affect octane-requirement determinations. For instance, one car showed a trace of knock with 90 per cent C-8 in A-3 with 90 per cent humidity in the air, while on

another day with 64 per cent humidity in the air it showed a heavy "minus knock" under similar temperature conditions. (This term "minus knock" seems to be a new one in the vocabulary of fuel technique, and not a particularly happy choice—Reviewer.)

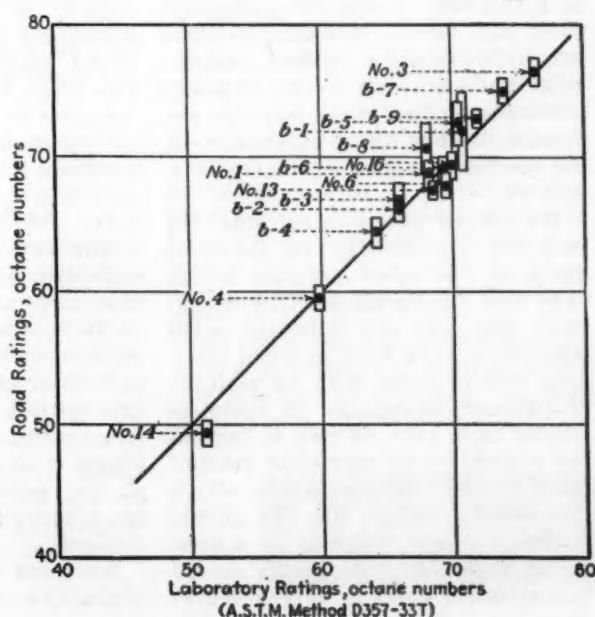
It was also shown by the Uniontown tests that different cars have entirely different speed-detonation characteristics, and the cars used in the test could be divided into the following groups on this basis:

1. Cars whose knock intensities with both reference and test fuels are a maximum at low speed.
2. Cars whose maximum knock intensities with both reference and test fuels occur at intermediate speeds.
3. Cars whose maximum knock intensities with both reference and test fuels occur at high speeds.
4. Cars in which the knock intensities with both reference and test fuel peak at two different speeds.
5. Cars in which the maximum knock intensity with reference fuels

occurs at low speed, while the maximum intensity with some of the test fuel occurs at high speed or both at high and at low speed.

Further research is required to explain these peculiarities of engine and fuel behavior. Among the factors which it is planned to investigate in the future are the octane-number requirement of the car and the shape of its knock-speed curve; the car speed at which the maximum knock occurs, the intensity of the knock at which ratings are made, the magnitude of the experimental error in making individual determinations, the temperature of the mixture, and the character of the road-testing technique and of the laboratory knock-rating procedure.

Correlation between road and laboratory ratings



# Governmental Worries Delay Expansion Needed to Put Unemployed Back to Work

by Lothair Teetor

Vice-President, The Perfect Circle Co.



Lothair Teetor

**T**HERE probably has never been a time when business men in general were any more thoroughly confused on the various issues of government than they are today. Just when the Administration is about ready to light the fuse on a tremendous governmental bomb of some kind and have all the business men shaking in their shoes, they withdraw the match and say, "We are not going to do that—we were only fooling." As a result, they have successfully stifled business activity simply by keeping business men worried all the time and keeping their minds occupied with governmental problems rather than their own business problems.

No management group can work at very high efficiency if it is continually worried by some outside influence, and it seems that particularly in the last year government has not cooperated with business men in allaying their fears and helping them build bigger business in order to get our working people back to work. Certainly, unemployment will be the dominating problem until we have business expansion—and as long as government continues to discourage business expansion rather than encourage it, the specter of unemployment will be with us.

We are not averse to reforms. In fact, we are heartily in favor of many of the labor reforms which have been the result of NRA activities. But why our Administration reformers think that national business should jump from an attitude of extreme selfishness to complete Utopia in a year or two is beyond our conception of consistent reasoning. We have generations in which the social problem can be slowly worked out, and there is no reason in the world why our country should be completely upset by reform move-

ments that shake the very foundations on which this country and its business has been built.

The Administration's amateur tinkering with labor problems has probably caused the business men more worry than anything else. It seems to us that legislation and the operation of our government has been principally in the hands of idealistic labor reformers, professional labor lobbyists, and those whose sole motive is to poll as many votes as possible. Our idealistic reformers were probably sincere, but due to their lack of experience in dealing with labor and social problems they were misguided. I do not believe business men in general have any patience whatever with the other two classes—especially in the face of four years of depression, with business surpluses and business nerves stretched to the breaking point. If there ever was a time when the government should not have rocked the labor boat it was during the last year. We hope that those in control in Washington have learned something of a lesson during their recent experiences and fully realize that steps for the betterment of labor must be small ones, fully thought out by men of experience and unquestioned integrity.

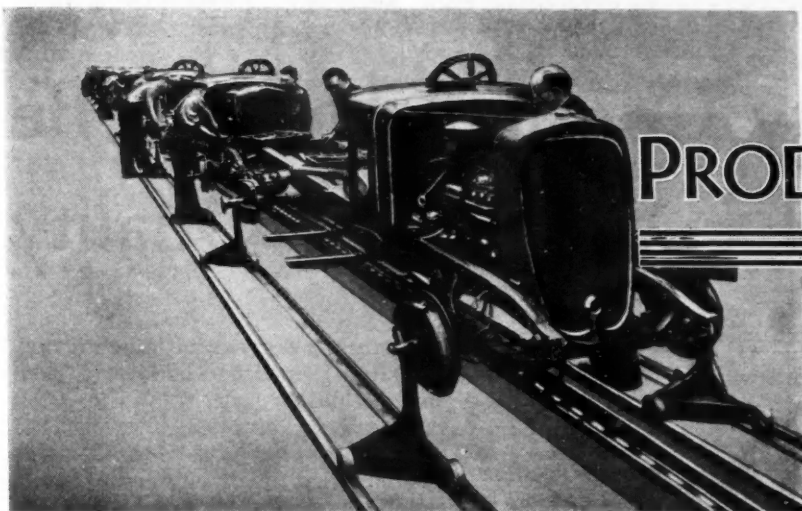
## Reckoning to Come

Our own business experience this year has been good, but we know that government money, loaned or given to the people in one way or another, has accounted for much of our sales, and we cannot think that this method of creating business can long continue. We appreciate the increase in business, but we are afraid of the reckoning that may come to us because of the source of this business.

Everyone in this organization was in hearty accord with that part of the

President's Reemployment Agreement which set forth minimum wages and maximum hours. We think this was truly a constructive and necessary piece of legislation. We are not, however, in favor of the Codes of Fair Trade Practices. Industry in this country is born of competition, and any effort on the part of different manufacturers themselves to limit competition will eventually work a hardship on the industry and the people. We would be glad to see all government tinkering with business trade practices stopped, and hope they will take a stand against collective price-fixing except on basic raw products, where occasionally price-fixing might be advantageous. It seems to us that the construction and building industry has been absolutely choked to death with its price-fixing on both materials and labor. We should like to see the maximum hours and minimum wage provisions kept in our legislative activities, but so far as the industrial codes are concerned we would undoubtedly be better off if they were all scrapped and the tremendous bureau at Washington dispensed with and the men sent back home.

We think the United States will probably continue to progress and get back on its feet in spite of government, but it would certainly help a lot if the present Administration could forget idealism and politics long enough to help rather than hinder business.



## PRODUCTION LINES

### Solvent Refining

Socony-Vacuum chemist explained in amazingly simple terms the mechanics of the solvent process of refining engine lubricants which has been adopted by the company. It's like this—suppose you have a mixture of sand and sugar and the problem is to reclaim the sugar. If you place the mixture in a container and pour water over it, the sugar will go into solution, and when the water is filtered and evaporated the residue will be sugar. Roughly that is the action that takes place in solvent refining—each solvent has the ability to select a definite fraction of the crude and to carry it out of the mess.

### Style Note

**NOTE:** This is inspired by the artistic and most attractive metal lapel ornament which identified those attending the recent AGA convention. We in common with many of you attend many meetings and conventions. Usually the men attending such functions are suitably identified by metallically framed tags, huge celluloid badges, cardboard tags, et cetera. The AGA button mentioned here is small and unobtrusive; it's more like a frat pin—in fact we expect to mystify some of our friends by wearing it as if it were.

### Pattern Axioms

One of the real old time foundry craftsmen gave us some advice on foundry pattern practice at the AFA Convention. First is the quality of the pattern—cutting corners at the expense of quality will not result in over all economy. Another tip—let the foundry expert go over the de-

sign of the part as well as the details of the pattern before any work is done. Both ideas seem so sensible, if almost self-evident, that we're passing them on to you.

### Autumn Color

*Autocolor* for autumn and winter, by Ditzler, is off the press. The feature of this issue is a color series from the 1934 season cards of the Textile Color Card Association. The use of Bleu Militaire, Stroller Green, Black Cherry, just to name a few, is described in no uncertain terms by Margaret Hayden Rorke.

### New Paint

In the field of synthetic finishes for automobile bodies, Ford still is the only organization to use the new process in regular production. We learn from devious channels that three other, or perhaps of one of three other, large volume producers may adopt synthetic baking enamels for body finish in 1935 production. Certainly most interesting if true.

### Bright Plates

The 1935 New Jersey automobile license plates are to have a black enamel field with aluminum figures. The aluminum figures will reflect the light at night and be more outstanding than a painted service. Other states will doubtless observe with interest.—*Aluminum News Letter*.

### Fashion Hint

Here's proof that Monel Metal equipment has caught the eye of fashion. Stores are now advertising "Monel Gray" among various colors in shirts.

### Pencil Pointer

You've got to hand it to the Norton Company for ideas. Take for example the pencil pointer we have just received. It's a handy pad of abrasive coated sheets, each one representing a sample of Norton no-slip tile or tread, some of which you may specify on occasion. At any rate, the pad is just the thing for drafting rooms and evidently there are enough of them to go around to those who want them.

### Past and Present

A historical review of the development of welding as an industrial process is covered in fine fashion in a paper by A. M. Candy of Westinghouse. It takes up the practical as well as scientific phases of the process from its beginnings to present day applications. We're sure that you will enjoy reading, "Welding—Past and Present."

### Fast Treating

Some time back we mentioned the Chapmanizing process for hardening low carbon free-machining steels. The Chapman people now are in a position to license those interested in the method. Chapmanizing is really an accelerated nitriding process for low carbon steels, utilizing the Chapmanizer unit which dissociates ammonia gas and distributes it to the liquid bath. It can also be used for producing a case on malleable iron castings. Are you listening?

### Synthetic Resins

In 1933, domestic production of synthetic resins of coal-tar origin was in excess of 41 million (41,000,000) pounds. Think of it.—J. G.



# Viscosity-Gravity Constant Held to Be Index of Diesel Fuel Ignition Quality

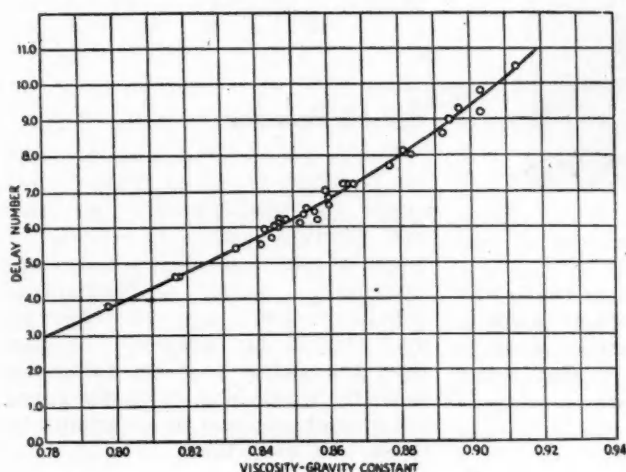


Fig. 1 — Relation between Moore & Kaye viscosity-gravity constant and delay number as determined with a modified C.F.R. Engine

**A**NOTHER attempt to evolve a method of evaluating the combustion characteristics of Diesel fuels from their commonly determined physical properties was described in a paper presented by C. C. Moore, Jr., and G. R. Kaye of the Union Oil Company of California at the recent annual meeting of the American Petroleum Institute. The physical properties referred to are the gravity and the viscosity.

Hill and Coats in 1928 developed an expression for the paraffinicity of petroleum fractions which they termed the viscosity-gravity constant. This constant can be readily determined from the viscosity and gravity determinations that are regularly made on all Diesel fuels. The Hill and Coats formula for the gravity constant is

$$G = A + (0.10752 - 0.10 A) (\log V - 38),$$

where

$G$  is the gravity in A.P.I. degs. at 60 deg. F.;

$A$  is the viscosity-gravity constant, and

$V$  is the Saybolt Universal viscosity in sec. at 100 deg. F.

Hill and Coats admitted that the formula became increasingly unreliable for viscosities of less than about 50 seconds. A check by Moore and Kaye showed that the formula was sufficiently reliable for all viscosities of more than 39 sec-

onds, but since a good many Diesel fuels have viscosities of between 34 and 50 seconds at 100 deg. F., they set about developing a more accurate viscosity-constant formula and derived the equation

$$G = 1.082 A - 0.0887 + (0.776 - 0.72) (\log \log (KV - 4))$$

where

$G$  is the specific gravity at 60 deg. F.;

$A$ , the viscosity-gravity constant, and

$KV$ , the kinematic viscosity in millistokes at 100 deg. F.

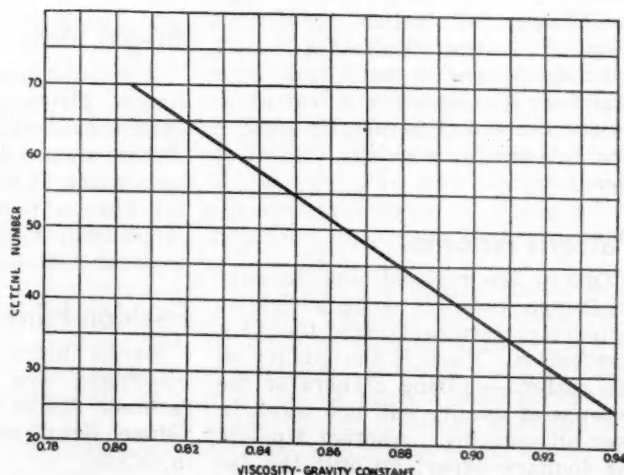
The authors express the conviction that the viscosity-gravity-constant formula given by them is fun-

damentally correct, although it may be slightly modified by later experimental data.

It may be recalled here that the ignition quality of a Diesel fuel for use in any given engine is determined by its ignition delay in that engine. The shorter the ignition delay, the better the fuel. That ignition delay cannot be used as an absolute criterion of ignition quality is due to the fact that it depends not on the fuel alone but also on engine factors. The authors therefore determined the ignition delay for a wide variety of Diesel fuels in a modified C.F.R. engine and plotted the values found against the viscosity-gravity constants of the same fuels as determined by their formula. The resulting plot is reproduced in Fig. 1.

The Diesel fuels on which this correlation is based included representative products of many foreign and domestic oil companies, and their physical properties were given in a table included in the paper. Fig. 1 establishes a significant correlation between the delay number (degrees of ignition delay) on the modified C.F.R. Diesel engine and the viscosity-gravity constant of Diesel fuels over an exceedingly wide range. It is seen that the ignition quality of a Diesel fuel is a function of its paraffinicity, for which the viscosity-gravity con-

Fig. 2 — Relation between cetene number and Moore & Kaye viscosity-gravity constant of Diesel fuels



stant is a satisfactory expression. Proof of this relationship is considered of great value by the authors, for the reason that it reduces the necessity for engine-rating as a means of determining the ignition quality of a Diesel fuel.

The relationship between ignition quality and paraffinicity is expressed in its broadest terms in Fig. 2. This graph shows the rela-

tion between the cetene number and the viscosity-gravity constant calculated from the authors' formula. It will be seen that there is a straight-line relationship between the two factors, which justifies the conclusion, in the authors' opinion, that ignition delay is a function of the paraffinicity of the fuel, and independent of viscosity over the usual range.

Since the formula for the viscosity-gravity constant is rather involved and requires laborious calculations, the authors compiled a table which gives the cetene numbers corresponding to Saybolt Universal viscosities at 100 deg. F. between the limits of 34 and 500 and A.P.I. gravities at 60 deg. F. between the limits of 18 and 38. This table is included in the paper.

# The Heavy Duty Transport Market for High Speed Diesel Engines

From a paper presented before the annual convention of the American Petroleum Institute, Nov. 14, at Dallas, Tex., by Joseph Geschelin, Engineering Editor of Automotive Industries

**W**HAT of the market for the high-speed automotive diesel engine? What is its significance to the petroleum industry at large?

While it would be most difficult to answer these questions directly and without reservation, this much is certain, that of the power units in the engineering world, the high-speed automotive diesel engine is the most dependent upon its fuel. Not only performance, which, obviously, is a direct function of the characteristics of available fuels, but the whole economic future is linked with the availability of its fuel as well as the ultimate trend in fuel cost. The future, therefore, resides to a large extent in the hands of the petroleum industry.

Analysis of published records of fuel economy coming from operators all over the world, and including the experience in this country, indicates that the diesel is cutting fuel costs between 60 and 80 per cent, the variation being due to the differences in cost of fuel in various localities. Naturally this extraordinary economy is due to the present low fuel cost as well as the absence of a special fuel tax; it may not last forever, but certainly it is present and may continue for some time to come.

More specifically, the operators of heavy-duty equipment, as exemplified by fully loaded truck-tractor trains, actually show a saving of

three to five cents per mile on their fuel, tax-free.

Still another factor of outstanding importance lies in the demand of our export market. In the past the automotive industry has exported an average of almost 25 per cent of its yearly truck production, which rose to 40 per cent in 1929. With the advent of production diesel engines in this country our truck manufacturers have been placed in a position to compete on better terms with the European manufacturers who have been making inroads on our export business. The same is true of domestic tractor manufacturers.

For an estimate of the potential market for diesel equipment I have used the registration figures published in the "Automobile Facts & Figures, 1934 Edition," as well as the 1934 Statistical Issue of *Automotive Industries*. In 1933 the total motor truck registration was 3,226,747 units. Assuming that diesel equipment will be found economical only for vehicles in excess of 2½ tons capacity, we can get a little more closely to the actual market. According to "Facts and Figures," the average yearly production of motor trucks of 2½-ton capacity and over was about 5 per cent per year of the total for the last five years. Using this percentage we can estimate that in 1933 there were approximately 161,000 trucks in operation that might fall

in the category of diesel equipment.

Yearly production of vehicles of 2½ tons and up has run from an all-time high in 1929 of over 54,000 down to 14,523 in 1933.

In addition to the foregoing there is a total of 45,000 buses in common carrier service in the United States. Of these, 26,314 are in intercity and intrastate service, but only 5300 of the latter are in interstate service, according to *Bus Transportation*.

The foregoing specifies the potential market for the diesel engine, assuming almost 100 per cent replacement of all vehicles in service. Obviously this is untenable, and we may say that the real market is a certain small percentage of the yearly production of trucks and buses plus a relatively higher volume of replacement business. We may say in general that the market for the diesel narrows down to those units that can yield a sensible economy in operation, consistent with the higher investment charge.

## Future Developments in the Fuel Situation

In considering the future trend of the fuel picture, I am starting first with the premise that there is an abundance of straight run fuel oils and that an appreciable increase in the demand for this type of fuel will not affect the volume

of cracking stocks needed for gasoline. This is another controversial element and one that may be the subject of considerable debate. Some say that any increase in the demand for the straight run furnace oils will create a shortage, will affect the availability of cracking stocks, and will cause the price of diesel fuels to increase materially.

Several petroleum technologists with whom I have discussed this matter do not share this point of view. In fact, very recently the chief chemist of one of the large refining plants in the East told me that an increased demand for the straight run furnace oils would have very little effect, if any, up to the point where the usage of diesel fuel would amount to about 30 per cent of total gasoline volume. If this be true, then there is very little to worry about because it would take an extraordinary expansion in the diesel field before we could

hope to approach this break-even point.

If the major premise stated above is tenable, then we may assume that for some time to come there will exist a price differential of perhaps two to three cents a gallon between gasoline and fuel oil purchased in bulk, with a still greater spread in price as long as fuel oil is tax free.

Suppose that the demand for diesel fuel becomes so high that its price comes up to the economic limit; also that the fuel is no longer tax free but carries about the same tax as gasoline. It is believed that under these conditions the price of fuel oil still will run from one to two cents less than the bulk price of gasoline. However, let's assume that the price of the fuel oil is exactly the same as that of gasoline.

Under these conditions, the diesel would rest on its inherent economy which, on the average, amounts to 30 to 50 per cent saving in fuel by volume.

## Stainless Steel Specifications Modified

IRON AGE reports that specifications for stainless steel strip, which is largely used in the construction of high-speed trains, have been modified as the result of practical experience. At first tensile strength of 175,000-200,000 lb. per sq. in., with a cold bend of 180 deg. flat, were called for, but today the demand is for a minimum tensile strength of 150,000 lb., an elastic limit of 120,000 lb. and a bend test of 120 deg. both in the direction of rolling and at right angles thereto. The same strip will no doubt find application in automobile construction.

## New Soviet Truck Plant

A new Soviet automobile plant is to be erected on a site selected by the Commissariat for Heavy Industry some 8 miles from Samara. It is intended to produce 5-ton and 8-ton trucks and is to have a capacity of 40,000 trucks per year.

## A Development in Body Welding

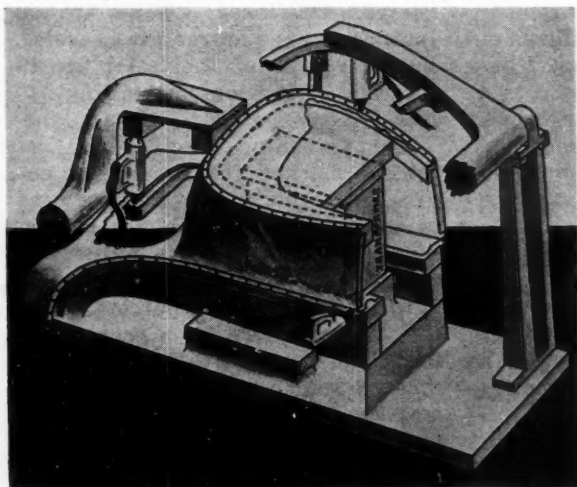


Fig. 1—A welding machine designed to replace bar welders

The second feature is a design incorporating a built-in, high efficiency transformer, which permits the use of short bus bars and electrode leads thus reducing the voltage drop in the secondary to a minimum. The combination of new features has produced a welding machine of great flexibility and capable of producing high quality welds on a production basis. —Contributed by Peter Fessler, consulting welding engineer.

ONE of the outstanding developments noted recently in the body industry is the welding machine shown in Fig. 1, designed to replace the ordinary bar welders which have been used to build up the front end assemblies for all-steel bodies.

This machine has two distinct features which should be of great interest to production executives. The first is the air operated bar tool re-

placing the simple hand operated bars. Fig. 2 shows a typical tool combining both the electrodes and air cylinder in one unit. It is convenient to handle and efficient in operation.

Fig. 2—A typical tool combining electrodes and air cylinder in one unit

